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ROADWAY ENVIRONMENT SUBSYSTEM

Prepared

for

the

MONTANA HIGHWAY TRAFFIC SAFETY DIVISION

Helena, Montana

by

the

Department of Civil Engineering and Engineering Mechanics

Montana State University

Bozeman, Montana

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Chapter 1

OBTAINING ROADWAY INFORMATION

The ROADWAY ENVIRONMENT SUBSYSTEM is one of the data files in the total data bank system known as the Montana Integrated Traffic Records System (MITRS). The information in the Roadway Environment file is supplied by various administrative components of the Montana Department of Highways.

The system consists of stored data files and computer software, or programs. These programs perform the dual functions of:

1) file maintenance, or in other words, keeping the system data current, and

2) producing reports and summaries.

ROADWAY ENVIRONMENT SUBSYSTEM

This is historically the oldest of the existing subsystems in the MITRS and is receiving extensive current use. The system consists of modular units and can be expanded as the need arises.

The component files currently in existence are as follows:

1) ROADLOG - which contains data pertaining to physical characteristics of the roadway, such as, number of lanes, year built, surface type, width, base thickness, etc.

2) TRUE MILEGE - which pinpoints the location of reference posts on the federal aid and local roadway system.

3) TRAFFIC - which contains traffic data for the three years prior to the current year, such as, average daily traffic at a mile-point, percent of out-of-state traffic vehicles, percent of pick-up trucks, percent of commercial vehicles, etc.

4) SUFFICIENCY - which contains data relating to the Montana Department of Highway's Planning and Research Bureau Sufficiency Rating system to compare the sufficiency of existing rural highways with the latest design standards. The rating system takes into consideration the structural adequacy, the safety, and the traffic capacity of the roadway.

ROADWAY ENVIRONMENT SUBSYSTEM (cont'd)

5) BRIDGE - which contains one stored record for each bridge in the state, and each record supplies descriptive and appraisal data, such as, clearance, number of lanes, year built, design load, year improved, etc.

6) RAILROAD CROSSING - which contains one stored record for each railraod crossing in the state, and each record supplies descriptive and classificatory information.

7) SKID - which contains the data describing the results of tests run to determine the resistance of the pavement surface of the roadway to vehicle skidding.

Once information has been stored in the data files, it can be recalled in order to produce statistical reports or to give specific details about individual isolated situations as a user may desire. By design, the system is built with three important component elements of basic philosophy. They are:

1) that each data element should reside in one and only one location within the system,

2) that all information produced should come from this raw data and finally,

3) that the total system be designed for the prospective user, and that every possible feature be incorporated that would facilitate maximum use of the system by contributors to the data base.

It is the purpose of this manual to provide information to potential users of these roadway environment data about:

1) the items printed out in the listing and standard summaries, and,

2) how to most efficiently request a particular kind of data.

Even though this information is being made available, it is not intended that a potential user feel restricted to the use of standard summaries and list. If your interest is in obtaining information which does not appear to be routinely available, you should contact the Montana Highway Traffic Safety Division in Helena and request assistance in obtaining any data which is needed.

ROADWAY ENVIRONMENT SUBSYSTEM (cont'd)

The listings and summaries currently available are in MITRS because some agency had a use for them. Other reports will be developed as new uses are found for putting the stored data to work. You are encouraged to communicate your special needs, or problems that you are trying to solve, to Highway Traffic Safety so that the maximum utilization of the Roadway Environment file may become a reality.

THE REFERENCE POST SYSTEM

The Roadway environment system files are organized around the reference post system. This system is a method for uniquely identifying roadway locations (milepoints), and consists of a set of non-uniformly spaced physical reference posts (mileposts) located along roadways. The reference posts, in general, are a mile apart, but may vary considerably from this distance. The markers are numbered sequentially.

In order to uniquely specify a milepoint on a given route, two items are specified:

1) the number of reference post, and

2) the distance from that reference post to the roadway location.

The distance specified is positive if travel from the reference post to the milepoint is toward higher-numbered reference posts, and negative if travel is toward lower-numbered reference posts.

As an example of the use of the reference post system, a point located 0.348 miles beyond reference post 146 toward reference post 147 is specified as milepoint 146+0.348. The point may also be referenced in relation to marker 147. If, for example, markers 146 and 147 are 1.459 miles apart, the milepoint may be specified as 147-1.111.

To determine the distance between two milepoints, it is necessary to establish the location of all of the reference posts on a route by means of a common point. A "true mileage" file locates each reference post with respect to the beginning milepoint (000+0.000) of the route on which it is located.

THE REFERENCE POST SYSTEM (cont'd)

To complete the key for MITRS files, the route system and route number are joined together with the milepoint. The route system is a 1 character code:

I -- Federal Aid Interstate

P -- Federal Aid Primary

S -- Federal Aid Secondary

U -- Federal Aid Urban

L -- Local System

The route number is a 5 digit number. The complete key provides unique identification for every roadway location stored in the system files.

Following is an example of the key for a highway location which is 0.45 miles beyond reference post 307 toward reference post 308 on Federal Aid Interstate 90.

I	0	0	0	9	0	3	0	7	+	0	4	5	0

DESIGNATING ROADWAY FOR PROCESSING

Of all the programs available in the MITRS Roadway Environment subsystem, there are ten that will be discussed in sufficient detail so that you should be able to identify the particular program that will provide the data that you are seeking to obtain, if, in fact, this program is in existence.

In addition to understanding what information will be printed out in a particular report, it is also essential that you be able to restrict the data in the report to those roadways or to those geographical areas which are actually of interest to you.

DESIGNATING ROADWAY FOR PROCESSING (cont'd)

The options available to you will first be discussed and then in Chapter 2 each of the ten programs will be scrutinized, and those options which can be used to restrict the output of each program will be indicated. The contents of certain other listings will be indicated in an abbreviated form.

It is possible to designate a system of routes, several routes in a system, a single route, or a portion of one route for processing. The optional parameters used are:

1) DATA - this parameter can be used to select systems in the following ways:
   a) the Federal Aid Interstate system
   b) the Federal Aid Primary system
   c) the Federal Aid Secondary system
   d) the Federal Aid Urban system
   e) the local system
   f) All systems (1 through 5)
   g) the Federal Aid system (1 through 4)
   h) the Federal Aid Interstate plus Primary systems
2) DATA + Route Number
   a) to process a single route you may specify the system designation and its federal aid route number. For example, specifying "Interstate 90" would process all the data for the full length of I 90.
   b) to process several routes in a given system you may specify the system designation and the inclusive federal aid route numbers. For example, "Secondary 200 - 300" would process data for all routes from S200 to S300.
3) DATA + Route Number + START-MILEPOINT + END-MILEPOINT
   a) to select only a portion of a route, you may specify the system designation, the federal aid route number, and the starting and/or ending milepoint. For example, "Primary 2 from milepoint 105 to milepoint 154" would

DESIGNATING ROADWAY FOR PROCESSING (cont'd)

process all the data for a forty-nine mile stretch of designated highway (US 10) from Missoula to Drummond.

DESIGNATING DATA TO BE PROCESSED BY THE SELECT OPTION

It is possible to designate the stored information to be processed in some programs by data elements or sets of data elements stored within the roadway environment files.

This is known as a SELECT statement. Due to the large number of selection options available, it is impractical to attempt to specify individual criterion directly. A partial list of the data elements upon which selection can be made will be included as each program is discussed in Chapter 2.

For example, it is possible to request that a particular program only process those data relating to sections of roadway on which the average daily traffic was equal to or greater than 1000 vehicles.

Another example, it would be possible to request that a summary include only those sections of roadway that had been constructed since 1950 and where the surface type classification was portland cement concrete.

The discussion of the ten standard types of list or report available to users of the data stored in the Roadway Environment subsystem files will refer back to these explanations of the use of the optional parameters for limiting the report output to the information actually desired, and they should assist use of the program by anyone seeking to obtain data.

It should again be stressed that prospective users are encouraged to call upon the Highway Traffic Safety Division personnel to help solve any problems that arise in the acquisition of output data.

Chapter 2

STANDARD OUTPUTS

In the material which follows, we will present information relating to the ten outputs that we feel would be of major interest to users of the MITRS Roadway Environment Subsystem. Each program will be discussed in the light of:

1) the printed data it provides, a copy of the actual output will be included,

2) the required parameters you must specify,

3) the optional parameters you may want to specify, and

4) a typical sample request you might want to submit for processing.

Since not all available programs are being discussed in detail, a brief description of certain additional outputs will be included along with a copy of the output.

Again, we want to put emphasis on the fact that providing needed information is the real name of the game, and that the ten outputs we discuss in no way restrict other kinds of information outputs that you might need.

Probably the most powerful tool available in using the standard outputs is the SELECT capability. Quite often the programs which have become available are in response to the need for compiling certain statistics for reports submitted on a periodic basis. These would very often be prepared on a state-wide or a total-system data base.

With the SELECT capability, the user specifies which data records will be processed. The user accomplishes this by defining a relationship. A relationship describes a test that the SELECT computer software will perform to determine whether a record is selected for processing. A single condition can be specified, or a multiple relationship of two or more conditions can be used.

There are two kinds of relationships which can be specified:

1) In the first case, a data element within a file is compared to some constant value. For example, one might ask a summary to process only those remarks in which the data element from the Roadlog file, YEAR-IMPROVED, was equal to or greater than 1955. In this case, only records for roadway sections improved since 1955 would be processed.

2) In the second case, one data element within a file is to be compared with a second data element. For example, one might ask a summary to process only those records in which the data element from the Roadlog file, YEAR-BUILT, was equal to another data element, YEAR-IMPROVED.

Both of the examples stated above involve only single relationships. An example of a multiple relationship might be to specify the Bridge data records to be processed in a listing to be those in which data element TOT-HORIZ-CLEAR (total horizontal clearance) was less than 45.0 feet, and the DESIGN-ADT (design average daily traffic) data element was greater than 500.

To summarize, the SELECT option gives the user the opportunity to access information in a completely automated way. Very often the availability of this kind of technical assistance would have been extremely desirable in the past, but was impractical when only manual means of extracting the information were available to the user. The Integrated Traffic Records System software programs eliminate the man-hours, time consumed and the expense of providing valuable technical information.

We will proceed to explore a number of the currently available lists and summaries, beginning with those from the Roadlog portion of the Roadway Environment subsystem.

ROADLOG FILE

1) LIST - this is a formatted listing of roadlog records. Each record contains information pertaining to a section of roadway. Sections break at major junctions, city limits, county lines and at a point at which the physical characteristics of the roadway change. An example of the output is shown in Figure 1 on page 10.

a) Required parameters - there is one.
DATA - the user must specify the roadway system or system and route number (see page 5).

b) Optional parameters - there are three.
START-MILEPOINT, END-MILEPOINT - (see page 5). If this option is not specified, the entire system or route is processed.
SELECT - (see page 6, 7). Stipulate special restrictions you would like to impose on the records to be processed. A partial list of Roadlog data elements for which select relationships can be established is shown in List 1 on page 11. Data elements from the Traffic file, List 2 on page 32, are also available.

c) In Sample 1 on page 12, we see an example of a typical request which a user might send to Montana Highway Traffic Safety to be processed.
This request would list all the section of Federal Aid Primary 1 (US 2) in Valley County where the surface width was less than 30 feet. (The Reference Posts indicated are the beginning and ending milepoints of US 2 in Valley County.)

RT-#	MILE POST	******* SECTION DESCRIPTION *********	PROJ	YR	SUR RT	WIDTH TYP	SF	RD	LOCATIONS	LENGTH ROUTE	SECTN	CONST	UNIMP	WYE	ACCUM MILEAGE	RE	CY	CITY
P00008		US 12														DS		
P00008	000+0.000	JCT I 90 BARRISON POWELL CO	EAGH	50	RMS	24	32	CNTY		.434	.438	.404		.034	.438		39	
P00008	000+0.434	POWELL CO	FAP	31	RMS	24	24	CNTY		3.208	3.208				3.646		39	
P00008	003+0.643	JCT FAS 407 POWELL CO	FAP	31	RMS	18	24	CNTY		.271	.271	3.479			3.917		39	
P00008	003+0.914	POWELL CO	F	64	RMS	32	32	CNTY		7.362	7.362	7.362			11.279		39	
P00008	011+0.267	POWELL CO	FAP	33	RMS	22	24	CNTY		.543	.543				11.822		39	
P00008	011+0.310	POWELL CO	FAP	33	RMS	22	24	CNTY		.758	.758				12.580		39	
P00008	012+0.583	POWELL CO	FAP	33	RMS	18	24	CNTY		.441	.441				13.021		39	
P00008	013+0.007	JCT FAS 272 POWELL CO	FAP	33	RMS	18	24	CNTY		.582	.582				13.603		39	
P00008	013+0.589	POWELL CO	FAP	33	RMS	22	24	CNTY		.760	.760				14.363		39	
P00008	014+0.357	POWELL CO	FAP	33	RMS	20	26	CNTY		.852	.852				15.215		39	
P00008	015+0.213	POWELL CO	FAP	33	RMS	20	24	CNTY		.758	.758				15.973		39	
P00008	015+0.971	POWELL CO	FAP	33	RMS	18	24	CNTY		.091	.091				16.064		39	
P00008	016+0.066	POWELL CO	FAP	33	RMS	22	24	CNTY		2.134	2.134				18.198		39	
P00008	018+0.194	POWELL CO	FAP	33	RMS	22	24	CNTY		.066	.066				18.264		39	
P00008	018+0.260	POWELL CO	FAP	33	RMS	22	24	CNTY		.934	.934				19.198		39	
P00008	019+0.194	POWELL CO	FAP	33	RMS	20	24	CNTY		.941	.941				20.139		39	
P00008	020+0.135	POWELL CO	FAP	33	RMS	22	26	CNTY		.227	.227				20.366		39	
P00008	020+0.362	POWELL COUNTY	FAP	33	RMS	18	24	CNTY		.947	.947				21.313		39	
P00008	021+0.307	POWELL CO	FAP	33	RMS	22	24	CNTY		1.908	1.908	11.942			23.221		39	
P00008	023+0.218	BEGIN FH 28 POWELL CO	FHP	73	RMS	24	28	CNTY		2.363	2.363	2.363			25.584		39	
P00008	025+0.581	BEGIN FOUR LANES POWELL CO	FHP	73	RMS	48	56	CNTY		1.096	1.096				26.680		39	
P00008	026+0.677	ENTER HELENA NE POWELL CO	FHP	73	RMS	48	56	NFOR		.420	.420				27.100		39	
P00008	027+0.167	END FOUR LANES POWELL CO	FHP	73	RMS	24	28	NFOR		.152	.152	1.668			27.252		39	
P00008	027+0.319	POWELL COUNTY	FHP	31	RMS	24	30	NFOR		.298	.298				27.550		39	
P00008	027+0.617	L&C CO LN L&C CO	FHP	31	RMS	24	30	NFOR		1.720	1.720	2.018			29.270		25	
P00008	029+0.337	LEWIS & CLARK CO	FHP	32	RMS	24	30	NFOR		.949	.949				30.219		25	
P00008	030+0.290	LEWIS & CLARK CO	FHP	32	RMS	24	30	CNTY		.255	.255				30.474		25	
P00008	030+0.545	LEWIS & CLARK CO	FHP	32	RMS	24	30	CNTY		.028	.028				30.502		25	
P00008	030+0.573	LEWIS & CLARK CO	FHP	32	RMS	24	30	NFOR		.801	.801				31.303		25	
P00008	031+0.371	LV HELENA NE LEWIS & CLARK CO	FAP	32	RMS	24	30	CNTY		.747	.747				32.050		25	
P00008	032+0.113	LEWIS AND CLARK COUNTY	FHP	32	RMS	24	30	CNTY		.299	.299				32.349		25	
P00008	032+0.412	LEWIS AND CLARK COUNTY	FHP	32	RMS	24	30	CNTY		1.580	1.580				33.929		25	
P00008	034+0.081	LEWIS AND CLARK COUNTY	FHP	32	RMS	24	30	CNTY		.188	.188	4.847			34.117		25	
P00008	034+0.269	LEWIS AND CLARK COUNTY	FAP	33	RMS	20	24	CNTY		.032	.032				34.149		25	
P00008	034+0.301	END FH 28 LEWIS & CLARK CO	FAP	33	RMS	20	24	CNTY		1.041	1.041				35.190		25	
P00008	035+0.415	LEWIS AND CLARK COUNTY	FAP	33	RMS	20	30	CNTY		1.488	1.488				36.678		25	
P00008	036+0.877	LEWIS AND CLARK COUNTY	FAP	33	RMS	22	30	CNTY		1.500	1.500				38.178		25	
P00008	038+0.371	LEWIS AND CLARK COUNTY	FAP	33	RMS	20	30	CNTY		1.284	1.284				39.462		25	
P00008	039+0.654	HELENA URBAN AREA	FAP	33	RMS	20	30	URBN		.933	.933	5.278			40.395		25	58
P00008	040+0.550	URBAN AREA	U	67	RMS	72	88	URBN		.142	.142				40.537		25	58
P00008	040+0.692	BEGIN 4 LDH JCT FAS 356 URBAN AREA	U	67	RMS	72	88	URBN		1.286	1.286				41.823		25	58
P00008	041+0.428	HELENA CL EUCLID AVENUE	U	67	RMS	72	88	CITY		1.038	1.038	2.456			42.861		25	58
P00008	042+0.467	EUCLID AVE	J	62	PCC	64	80	CITY		.075	.075	.075			42.936		25	58
P00008	043+0.056	END 4LDH JCT SPUR 8 BENTON AVE	MC	62	RMS	36	60	CITY		.269	.269				43.205		25	58
P00008	043+0.325	JCT FAS 454 NB NEILL AVE	MC	59	RMS	48	60	CITY		.240	.240	.509			43.445		25	58
P00008	043+0.564	JCT FAP 3													43.445	ER		
P00008	043+0.565	JOIN P00003 193+0.000-195+0.340													45.406	CO		
P00008	045+0.525	US 12 US 287													45.406	DS		
P00008	045+0.526	JCT I 15 URBAN AREA	I	62	RMS	60	76	URBN		.512	.512	.512			45.918		25	58
P00008	046+0.010	URBAN AREA	FAP	36	RMS	24	30	URBN		.466	.466				46.384		25	58
P00008	046+0.476	LEWIS AND CLARK COUNTY	FAP	36	RMS	24	30	CNTY		2.094	2.094				48.478		25	
P00008	048+0.571	EAST HELENA CL MAIN ST	FAP	36	RMS	24	30	CITY		.256	.256				48.734		25	37
P00008	048+0.827	JCT FAS 433 MAIN ST	FAP	36	RMS	24	30	CITY		.059	.059	2.875			48.793		25	37
P00008	048+0.886	MAIN STREET	FAP	36	RMS	48	58	CITY		.196	.196				48.989		25	37
P00008	049+0.082	JCT FAS 481 MAIN ST	FAP	36	RMS	48	58	CITY		.497	.497	.693			49.486		25	37

(01)

Figure 1 ROADLOG LIST Output

REQUEST FOR ROADWAY ENVIRONMENT SUBSYSTEM INFORMATION

TO: Montana Highway Traffic Safety Division
Capital Station
Helena, MT 59601

FROM: Valley County Highway Department
Glascow, Montana

PROGRAM: ROADLOG LIST

REQUIRED PARAMETERS:

DATA: US2 (Federal Aid Primary 1)

OPTIONAL PARAMETERS:

START-MILEPOINT: Reference Post 501

END-MILEPOINT: Reference Post 581

SELECT: List all the sections of roadway where the surface width is less than 30 feet.

SAMPLE 1

PARTIAL LIST OF
ROADLOG SELECT DATA ELEMENTS

KEY	ROUTE SYSTEM
ROUTE NUMBER	ROUTE SYSTEM AND NUMBER
REFERENCE POST	DISTANCE
MILEPOINT	SECTION LENGTH
ROUTE LENGTH	CONSTRUCTED LENGTH
UNIMPROVED LENGTH	WYE LENGTH
PROJECT CLASS	PROJECT NUMBER
NUMBER OF LANES	FINANCIAL DISTRICT
CITY	COUNTY
PATROL DIVISION	YEAR BUILT
YEAR IMPROVED	SURFACE WIDTH
ROADWAY WIDTH	SURFACE THICKNESS
BASE THICKNESS	SUFACE TYPE
MAINTENANCE SECTION	FUNCTIONAL CLASS
CONSTRUCTION DIVISION	PLANNING DIVISION
SECTION-TOWNSHIP-RANGE	SECTION
TOWNSHIP	RANGE
COINCIDENT SYSTEM	COINCIDENT ROUTE

LIST 1

ROADLOG FILE (cont'd)

2) LIST-&-SUM - this program prints the main listings of roadlog data that forms the bulk of the annual Federal Aid Roadlog report. Two sets of output are produced for each route processed. Thr first is a formatted listing of certain data from the roadlog records, and the second is a summary of mileage by county. An example of the output is shown in Figure 2 on page 14.

a) Required parameters - there is one.
   DATA - the user must specify the roadway system or system and route number (see page 5).

b) Optional parameters - there are three.
   START-MILEPOINT, END-MILEPOINT - (see page 5). If this option is not specified, the entire system or route is processed.
   SELECT - (see pages 6, 7). Stipulate special restrictions you would like to impose on the records to be processed. A partial list of Roadlog data elements for which Select relationships can be established is shown in List 1 on page 11. Data elements from the Traffic file, List 2 on page 32, are also available.

c) In Sample 2 on page 15, we see an example of a typical request which a user might send to Montana Highway Traffic Safety to be processed.
   This request would list and sum all sections of Federal Aid Secondary roadways in Dawson County.

FEDERAL AID PRIMARY ROUTE NUMBER 8

US 12

SECTION DESCRIPTION	MILE POST	MTCE SECT	PROJECT NUMBER	YEAR ALT	YEAR IMP	SURF TYPE	THICKNESS SURF	THICKNESS BASE	WIDTH SURF	WIDTH ROW	NO LN	SECT LENGTH	LOCATION	PROJCT LENGTH	ACCUM MILEAGE
JCT I 90 GARRISON POWELL CO	0+0.000	3960	FAGH 249 6	50	50	RMS	2.0	4.0	24	32	2	.438	COUNTY	.404	.438
POWELL CO	0+0.434	3960	FAP 249 A	31	53	RMS	4.0	3.0	24	24	2	3.208	COUNTY		3.646
JCT FAS 407 POWELL CO	3+0.643	3960	FAP 249A	31	34	RMS	3.0	3.0	18	24	2	.271	COUNTY	3.479	3.917
POWELL CO	3+0.914	3960	F 249 16	64	64	RMS	3.0	11.0	32	32	2	7.362	COUNTY	7.362	11.279
POWELL CO	11+0.267	3960	FAP 249A	33	66	RMS	4.0	3.5	22	24	2	.543	COUNTY		11.822
POWELL CO	11+0.810	3960	FAP 249A	33	56	RMS	3.0	3.5	22	24	2	.753	COUNTY		12.580
POWELL CO	12+0.583	3960	FAP 249A	33	34	RMS	3.0	3.5	18	24	2	.441	COUNTY		13.021
JCT FAS 272 POWELL CO	13+0.007	3960	FAP 249 B	33	34	RMS	3.0	3.5	18	24	2	.582	COUNTY		13.603
POWELL CO	13+0.589	3920	FAP 249A	33	52	RMS	4.5	3.5	22	24	2	.760	COUNTY		14.363
POWELL CO	14+0.357	3920	FAP 249B	33	38	RMS	2.5	10.5	20	26	2	.852	COUNTY		15.215
POWELL CO	15+0.213	3920	FAP 249A	33	52	RMS	2.0	3.5	20	24	2	.758	COUNTY		15.973
POWELL CO	15+0.971	3920	FAP 249B	33	34	RMS	3.0	3.5	18	24	2	.091	COUNTY		16.064
POWELL CO	16+0.066	3920	FAP 249A	33	58	RMS	4.0	3.5	22	24	2	2.134	COUNTY		18.198
POWELL CO	18+0.194	3920	FAP 249A	33	58	RMS	5.5	3.5	22	24	2	.066	COUNTY		18.264
POWELL CO	18+0.260	3920	FAP 249A	33	52	RMS	4.5	3.5	22	24	2	.934	COUNTY		19.198
POWELL CO	19+0.194	3920	FAP 249B	33	52	RMS	2.0	3.5	20	24	2	.941	COUNTY		20.139
POWELL CO	20+0.135	3920	FAP 249A	33	47	RMS	2.0	6.0	22	26	2	.227	COUNTY		20.366
POWELL COUNTY	20+0.362	3920	FAP 249A	33	33	RMS	3.0	3.5	18	24	2	.947	COUNTY		21.313
POWELL CO	21+0.307	3920	FAP 249A	33	59	RMS	4.0	3.5	22	24	2	1.908	COUNTY	11.942	23.221
BEGIN FH 28 POWELL CO	23+0.218	3920	FHP 23 1 2	73	73	RMS	3.0	9.0	24	28	2	2.363	COUNTY	2.363	25.584
BEGIN FOUR LANES POWELL CO	25+0.581	3920	FHP 23 1 1	73	73	RMS	3.0	9.0	48	56	4	1.096	COUNTY		26.680
ENTER HELENA NE POWELL CO	26+0.677	3920	FHP 23 1 1	73	73	RMS	3.0	9.0	48	56	4	.420	NATFOR		27.100
END FOUR LANES POWELL CO	27+0.167	3920	FHP 28 1 1	73	73	RMS	3.0	9.0	24	28	2	.152	NATFOR	1.668	27.252
POWELL COUNTY	27+0.319	3920	FAP 23 A	31	55	RMS	4.5	6.5	24	30	2	.298	NATFOR		27.550
L&C CO LN L&C CO	27+0.617	2525	FAP 28A	31	35	RMS	2.5	6.5	24	30	2	1.720	NATFOR	2.018	29.270
LEWIS & CLARK CO	29+0.337	2525	FAP 28B	32	35	RMS	2.5	6.5	24	30	2	.949	NATFOR		30.219
LEWIS & CLARK CO	30+0.290	2525	FAP 283	32	35	RMS	2.5	6.5	24	30	2	.255	COUNTY		30.474
LEWIS & CLARK CO	30+0.545	2525	FAP 28B	32	66	RMS	4.0	6.5	24	30	2	.028	COUNTY		30.502
LEWIS & CLARK CO	30+0.573	2525	FAP 28B	32	66	RMS	4.0	6.5	24	30	2	.801	NATFOR		31.303
LV HELENA NE LEWIS & CLARK CO	31+0.371	2525	FAP 23 B	32	66	RMS	4.0	6.5	24	30	2	.747	COUNTY		32.050
LEWIS AND CLARK COUNTY	32+0.113	2525	FAP 283	32	35	RMS	2.5	6.5	24	30	2	.299	COUNTY		32.349
LEWIS AND CLARK COUNTY	32+0.412	2525	FAP 28B	32	66	RMS	4.0	6.5	24	30	2	1.580	COUNTY		33.929
LEWIS AND CLARK COUNTY	34+0.091	2525	FAP 28B	32	35	RMS	2.5	6.5	24	30	2	.188	COUNTY	4.847	34.117
LEWIS AND CLARK COUNTY	34+0.269	2520	FAP 249C	33	33	RMS	3.0	2.0	20	24	2	.032	COUNTY		34.149
END FH 28 LEWIS & CLARK CO	34+0.301	2520	FAP 249 C	33	33	RMS	3.0	2.0	20	24	2	1.041	COUNTY		35.190
LEWIS AND CLARK COUNTY	35+0.415	2520	FAP 249C	33	33	RMS	3.0	2.0	20	30	2	1.488	COUNTY		36.678
LEWIS AND CLARK COUNTY	36+0.877	2520	FAP 249C	33	34	RMS	4.5	2.0	22	30	2	1.500	COUNTY		38.178
LEWIS AND CLARK COUNTY	38+0.371	2520	FAP 249 C	33	33	RMS	3.0	2.0	20	30	2	1.284	COUNTY		39.462
HELENA URBAN AREA	39+0.654	2520	FAP 249 C	33	33	RMS	3.0	2.0	20	30	2	.933	URBAN	6.273	40.395
URBAN AREA	40+0.550	2520	U 249 17	67	67	PMS	3.0	14.0	72	88	2	.142	URBAN		40.537
BEGIN 4 LDH JCT FAS 356 URBAN AREA	40+0.692	2520	U 249 17	67	67	PMS	3.0	14.0	72	88	4	1.286	URBAN		41.823
HELENA CL EUCLID AVENUE	41+0.428	2523	U 249 17	67	67	PMS	3.0	14.0	72	88	4	1.038	CITY	2.466	42.861
EUCLID AVE	42+0.467	2523	U 249 14	62	62	PCC	8.0	4.0	64	80	4	.075	CITY	.075	42.936
END 4LDH JCT SPUR 3 BENTON AVE	43+0.036	2523	CITY CONSTR	62	62	RMS	1.5	9.0	36	60	3	.269	CITY		43.205
JCT FAS 454 N3 NEILL AVE	43+0.325	2523	CITY CONSTR	59	59	PMS	1.5	8.0	48	60	4	.240	CITY	.509	43.445

********** SUMMARY BY COUNTIES **********

	ROUTE	CONST	UNIMP	AVE	CITY <5000	URBAN INSIDE CITY LIMITS	URBAN OUTSIDE CITY LIMITS	TOTAL CITY	TOTAL URBAN	COUNTY	NATL FOREST	INDIAN RESERV	OTHER	NET RURAL
BROADWATER	53.250	53.243			1.108			1.108		52.135				
JEFFERSON	1.514	1.514								1.514				
LEWIS AND CLARK	24.888	24.888			1.289	1.622	3.339	2.911	4.961	15.168	3.470			
POWELL	27.546	27.516		.034						26.550	.970			
LEWIS AND CLARK (SPUR)	1.011	.982				.982		.982	.982					
TOTAL	109.209	109.143		.034	2.397	2.604	3.339	5.001	5.943	95.497	4.340			105.176

Figure 2 LIST-&-SUM Output

REQUEST FOR ROADWAY ENVIRONMENT SUBSYSTEM INFORMATION

TO: Montana Highway Traffic Safety Division
Capitol Station,
Helena, MT 59601

FROM: Sheriffs Department, Dawson County
Glendive, Montana

PROGRAM: ROADLOG, LIST-&-SUM

REQUIRED PARAMETERS:

DATA: Federal Aid Secondary system

OPTIONAL PARAMETERS:

SELECT: Process records for Dawson County only.

SAMPLE 2

ROADLOG FILE (cont'd)

3) Other outputs

a) SURF-TYPE - will produce a listing according to surface type and any one of seven parameters chosen by the user. The options available are route number, year built, year improved, surface width, project number, cities, or counties. An example of the output for one case is shown in Figure 3 on page 17.

b) SUMMARY-BY-ROUTES - a summary where one line is printed for each route in the route system. An example of the output is shown in Figure 4 on page 18.

c) SUMMARY-BY-LOCATION - three summaries broken down by route number and location inside or outside of federal reservations. An example of the output is shown in Figure 5 on page 19.

d) FORHWY-SUMMARY - two summaries, the first a breakdown of forest highways by location and the second a breakdown of forest highways by surface type. An example of the output is shown in Figure 6 on page 20.

e) STATE-MILEAGE-502 - prints a summary breakdown by surface type and rural-municipal-urban location. An example of the output is shown in Figure 7 on page 21.

f) STATE-MILEAGE-505 - prints a summary breakdown by surface type, width, and average daily traffic. An example of the output is shown in Figure 8 on page 22.

g) STATE-MILEAGE-506 - prints a summary breakdown by traffic lanes, width and average daily traffic. An example of the output is shown in Figures 9 and 10 on pages 23 and 24.

h) LIST-ILOOPS - provides information about interstate loops, such as, loop length, roadway description, etc. An example of the output is shown in Figure 11 on page 25.

SUMMARY OF SURFACE TYPES
NET CONSTRUCTED LENGTH -- BY ROUTE NUMBER
FEDERAL AID INTERSTATE SYSTEM

ROUTE NUMBER		PRIMITIVE	UNIM-PROVED	GRADED & DRAINED	GRAVEL	BIT SURF TREAT	ROAD MIX	PLANT MIX	P.C. CONCRETE	TOTAL
15	RURAL					.241	56.356	321.212	15.009	392.818
	MUNIC						.203	6.479	2.938	9.620
	TOTAL					.241	56.559	327.691	17.947	402.438
90	RURAL						65.584	408.575	60.343	534.502
	MUNIC							7.681	2.001	9.682
	TOTAL						65.584	416.256	62.344	544.184
94	RURAL					.170	16.048	209.564	20.147	245.929
	MUNIC							2.966		2.966
	TOTAL					.170	16.048	212.530	20.147	248.895
TOTALS	RURAL					.411	137.988	939.351	95.499	1173.249
	MUNIC						.203	17.126	4.939	22.268
	TOTAL					.411	138.191	956.477	100.438	1195.517

Figure 3 SURF-TYPE Output

DETAIL SUMMARY BY ROUTES -- FEDERAL AID INTERSTATE SYSTEM

ROUTE NO.	NET ROUTE MILEAGE	** DEVELOPMENT STATUS ** CONSTR	UNIMP	WYE	LOCATED IN CITY	COUNTY	NATIONAL FOREST	INDIAN RESERVE	GAME REFUGE	STATE FOREST	NATL PARKS	STATE PARKS	NATL MON	MILIT RESERVE
15	402.438	402.438			9.620	380.968	11.850							
90	544.184	544.184			9.682	447.142	32.057	55.712						
94	248.895	248.895			2.966	237.102			8.827					
TOTAL	1195.517	1195.517			22.268	1065.212	43.907	55.712	8.827					

Figure 4 SUMMARY-BY-ROUTES Output

SUMMARY OF ROUTE LENGTHS AND LOCATIONS
FEDERAL AID PRIMARY AND INTERSTATE SYSTEMS

ROUTE NO.	******LOCATED OUTSIDE FEDERAL RESERVATIONS****** MUNIC	COUNTY	STATE FOREST	SUB TOTAL	LESS URBAN EXTENT.	TOTAL	**LOCATED INSIDE FEDERAL RESERVATIONS** NAT. FOREST	INDIAN RESERV.	NAT. PARKS	GAME REFUGE	TOTAL	GRAND TOTAL
15	9.620	380.968		390.588	10.018	380.570	11.850				11.850	402.438
90	9.273	447.142		456.415	16.967	439.448	32.057	55.712			87.769	544.184
94	2.966	237.102		240.068	2.662	237.406				8.827	8.827	248.895
SUBTOTAL INTERSTATE	21.859	1065.212		1087.071	29.647	1057.424	43.907	55.712		8.827	108.446	1195.517
1	14.155	400.360		414.515	6.971	407.544	96.062	162.773	3.632		262.467	676.982
2	31.666	332.031		363.697	33.704	329.993	9.066			.909	9.975	373.672
3	15.260	191.482		206.742	17.585	189.157		76.909			76.909	283.651
4	1.291	53.378		54.669		54.669						54.669
5	6.123	73.886	15.170	95.179	4.388	90.791	12.835	78.398		.074	91.307	186.486
6	1.609	71.672		73.281		73.281	15.534	27.043			42.577	115.858
7	8.597	70.965		79.562	6.996	72.566	17.574				17.574	97.136
8	5.030	98.839		103.869	5.972	97.897	4.340				4.340	108.209
9	.744	64.123		64.867		64.867						64.867
10	2.419	108.266		110.685	3.121	107.564						110.685
11	6.615	155.446		162.061	9.512	152.549	56.612				56.612	218.673
12	.673			.673		.673	8.620				8.620	9.293
13	.618	83.332		83.950		83.950						83.950
14	6.328	243.529		249.857		249.857	9.301				9.301	259.158
15	8.871	323.107		331.978	8.029	323.949						331.978
16	2.362	221.115		223.477	2.705	220.772		18.495		10.983	29.478	252.955
17	1.002	35.952		36.954	1.222	35.732						36.954
18	.981	82.006		82.987	.981	82.006						82.987
19	3.228	47.860		51.088	5.218	45.870	12.592				12.592	63.680
20	2.184	61.711		63.895	1.754	62.141						63.895
21	2.005	13.956		15.961		15.961						15.961
22	4.138	120.018		124.126		124.126				1.812	1.812	125.938
23	1.590	137.870		139.460	1.609	137.851						139.460
24		127.064	27.273	154.337		154.337	6.461				6.461	160.798
25	.055	46.326		46.381		46.381		6.375			6.375	52.756
26		7.533		7.533		7.533						7.533
27	2.450	77.576		80.026		80.026						80.026
28	2.843	34.623		37.466		37.466	27.950				27.950	65.416
29	4.131	61.571		65.702		65.702						65.702
30	.817	23.396		24.213		24.213						24.213
32	.949	24.972		25.921		25.921		39.885			39.885	65.806
33	.658	14.171		14.829		14.829	57.397				57.397	72.226
35		22.248		22.248		22.248	31.602				31.602	53.850
36		6.797		6.797		6.797	.769	41.151			41.920	48.717
37		27.299		27.299		27.299	14.900	61.444			76.344	103.643
38	.982	7.922		8.904		8.904						8.904
40	.897	1.710		2.607	2.607							2.607
42	.726	66.101		66.827		66.827				9.286	9.286	76.113
43	.522	42.295		42.817	.626	42.191						42.817
45	1.230	81.938		83.168		83.168						83.168
46		62.584		62.584		62.584	13.875				13.875	76.459
47		5.992		5.992		5.992						5.992
48	.681	29.238		29.919		29.919						29.919
49	.888	26.352		27.240		27.240						27.240

Figure 5. SUMMARY-BY-LOCATION Output

MONTANA FOREST HIGHWAY SYSTEM

CONSTRUCTION DETAILS

FOREST HIGHWAY ROUTE	ROUTE LENGTH PRIMARY	ROUTE LENGTH SECONDARY	IMPROVEMENT STATUS CONSTR	IMPROVEMENT STATUS UNIMP	IMPROVEMENT STATUS WYE	LOCATED IN CITY	LOCATED IN COUNTY	LOCATED IN NATIONAL FOREST	LOCATED IN STATE FOREST	LOCATED IN INDIAN RESERVE	LOCATED IN PARKS	GRAND TOTAL
1	32.378		32.378			1.816	11.291	19.271				32.378
2	20.560		20.560				7.927	12.633				20.560
3	7.411		7.411				5.307	2.104				7.411
5		34.635	34.631				11.595	23.036				34.631
6	68.686		68.686			1.052	52.100	15.534				68.686
7		23.102	13.632	9.468			3.526	19.574				23.100
8	85.501		85.501			3.452	57.551	24.498				85.501
9		21.457	21.465				2.552	18.913				21.465
10	5.094		5.094					5.094				5.094
11		32.551	32.549				16.437	16.112				32.549
12	21.961		21.961				.584	11.555	9.822			21.961
13	68.205		68.205					61.749		2.824	3.632	68.205
14	5.585		5.585					5.585				5.585
15		63.044	63.044				12.628	50.416				63.044
16	31.602		31.602					31.602				31.602
17	21.459		21.459			.331	8.536	12.592				21.459
18		7.602	7.602				7.602					7.602
19	23.563		23.563				5.989	17.574				23.563
20	16.117		16.098				2.242	13.856				16.098
21		7.960	7.960				5.342	2.618				7.960
23		5.384	5.384				5.384					5.384
24	8.808		8.808				.148	8.660				8.808
25		4.400		4.400				4.400				4.400
26	11.850		11.850					11.850				11.850
28	10.928		10.928				6.588	4.340				10.928
29		2.400		2.400				2.400				2.400
31	9.443		9.443				.142	9.301				9.443
32	52.756		52.756			3.152	10.689	38.915				52.756
40		8.739	5.139	3.600			4.141	4.598				8.739
42	41.948		41.948				3.946	38.002				41.948
43	16.594		16.594				2.049	14.545				16.594
45	8.815	22.436	31.238			.553	1.642	29.043				31.238
46	9.293		9.293			.673		8.620				9.293
51		14.949	9.949	5.000			5.232	9.717				14.949
52		13.502	5.260	8.240			2.500	11.000				13.500
53	22.922		22.922				8.022	14.900				22.922
55		2.711	2.711					2.711				2.711
56		42.702		42.700			28.130	4.570	10.000			42.700
57	58.677		58.664			.645	1.801	56.218				58.664
59	32.411		32.411			.227	4.234	27.950				32.411
60	8.564		8.564				8.564					8.564
61		57.622	11.742	45.878		1.189	8.445	47.986				57.620
PRIM	701.131		701.095			11.901	197.710	475.206	9.822	2.824	3.632	701.095
SEC		365.206	243.495	121.686		1.189	115.156	238.836	10.000			365.181
TOTAL	701.131	365.206	944.590	121.686		13.090	312.866	714.042	19.822	2.824	3.632	1066.276

Figure 6 FORHWY-SUMMARY Output

(20)

SUMMARY BY SURFACE TYPE *-- FEDERAL AID INTERSTATE SYSTEM

	RURAL	MUN.UNDER	URBAN	TOTAL	MUN.OVER
A					
B					
C					
E					
F,G-1,H-1	2.849	.113		2.962	
G-2,H-2,I,K,L,M	1058.796	13.085	20.236	1076.012	4.131
J	91.027		9.411	95.966	4.939
TOTAL	1152.672	13.198	29.647	1174.940	9.070

Figure 7 STATE-MILEAGE-502 Output

EXISTING SURFACED MILEAGE BY SURFACE TYPE, WIDTH, AND AVERAGE DAILY TRAFFIC ** SM505 **

FEDERAL AID INTERSTATE SYSTEM -- RURAL MILEAGE

ADT	SURFACE WIDTH 19 AND UNDER	20-21	22-23	24-26	27-35	36-43	44-47	48 AND OVER	TOTAL
1. LOW TYPE -- D,E									
UNDER 400									
400-999									
1,000-1,999									
2,000-2,999									
3,000-3,999									
4,000-4,999									
5,000-9,999									
10,000-14,999									
15,000-19,999									
20,000-29,999									
30,000-39,999									
40,000 AND OVER									
TOTAL									
2. INTERMEDIATE TYPE -- F,G-1,H-1									
UNDER 400									
400-999									
1,000-1,999				2.146					2.146
2,000-2,999		.170		.241					.411
3,000-3,999				.370					.370
4,000-4,999									
5,000-9,999				.222					.222
10,000-14,999									
15,000-19,999									
20,000-29,999									
30,000-39,999									
40,000 AND OVER									
TOTAL		.170		2.679					2.849
3. HIGH TYPE -- G-2,H-2,I,J,K,L									
UNDER 400									
400-999							23.007	38.173	66.180
1,000-1,999		20.246	1.942	46.880	30.576	6.295	72.397	143.760	322.096
2,000-2,999	.200	3.750	2.731	41.342	32.473	10.402	94.367	252.307	437.572
3,000-3,999	.025			11.356	44.217	.186	19.888	129.768	205.440
4,000-4,999					.958			78.901	79.859
5,000-9,999					.025			38.651	38.676
10,000-14,999									
15,000-19,999									
20,000-29,999									
30,000-39,999									
40,000 AND OVER									
TOTAL	.225	23.996	4.673	99.578	108.249	16.883	214.659	681.560	1149.823
4. COMBINED TOTALS									
UNDER 400									
400-999							23.007	38.173	66.180
1,000-1,999		20.246	1.942	49.026	30.576	6.295	72.397	143.760	324.242
2,000-2,999	.200	3.920	2.731	41.583	32.473	10.402	94.367	252.307	437.983
3,000-3,999	.025			11.426	44.217	.186	19.888	129.768	205.510
4,000-4,999					.958			78.901	79.859
5,000-9,999				.222	.025			38.651	38.898
10,000-14,999									
15,000-19,999									
20,000-29,999									
30,000-39,999									
40,000 AND OVER									
TOTAL	.225	24.166	4.673	102.257	108.249	16.883	214.659	681.560	1152.672

Figure 8 STATE-MILEAGE-505 Output

EXISTING MILEAGE OF SURFACED HIGHWAYS BY TRAFFIC LANES AND ACCESS CONTROL **SM506**

FEDERAL AID INTERSTATE SYSTEM -- RURAL MILEAGE

ADT	SURFACE WIDTH 31 AND UNDER	32-37	38-43	44-47	48 AND OVER	TOTAL
1. ONE WAY STREETS						
UNDER 400						
400-999						
1,000-1,999						
2,000-2,999						
3,000-3,999						
4,000-4,999						
5,000-9,999						
10,000-14,999						
15,000-19,999						
20,000-29,999						
30,000-39,999						
40,000 AND OVER						
TOTAL						
2. UNDIVIDED 4 OR MORE LANES						
UNDER 400						
400-999						
1,000-1,999					6.993	6.993
2,000-2,999					48.063	48.063
3,000-3,999					19.307	19.307
4,000-4,999					14.153	14.153
5,000-9,999					1.995	1.995
10,000-14,999						
15,000-19,999						
20,000-29,999						
30,000-39,999						
40,000 AND OVER						
TOTAL					90.511	90.511
3. DIVIDED 4 OR MORE LANES NO CONT						
UNDER 400						
400-999					27.458	27.458
1,000-1,999					89.382	89.382
2,000-2,999					186.656	186.656
3,000-3,999					104.707	104.707
4,000-4,999					64.748	64.748
5,000-9,999					36.656	36.656
10,000-14,999						
15,000-19,999						
20,000-29,999						
30,000-39,999						
40,000 AND OVER						
TOTAL					509.607	509.607

(23)

EXISTING MILEAGE OF SURFACED HIGHWAYS BY TRAFFIC LANES AND ACCESS CONTROL **SM506**

FEDERAL AID INTERSTATE SYSTEM -- RURAL MILEAGE

ADT	SURFACE WIDTH: 31 AND UNDER	32-37	38-43	44-47	48 AND OVER	TOTAL
4. DIVIDED 4 OR MORE LANES PARTIAL						
UNDER 400						
400-999						
1,000-1,999						
2,000-2,999						
3,000-3,999						
4,000-4,999						
5,000-9,999						
10,000-14,999						
15,000-19,999						
20,000-29,999						
30,000-39,999						
40,000 AND OVER						
TOTAL						
5. DIVIDED 4 OR MORE LANES FULL CONT						
UNDER 400						
400-999					10.236	10.236
1,000-1,999					47.385	47.385
2,000-2,999					17.588	17.588
3,000-3,999					5.754	5.754
4,000-4,999						
5,000-9,999						
10,000-14,999						
15,000-19,999						
20,000-29,999						
30,000-39,999						
40,000 AND OVER						
TOTAL					80.963	80.963
6. COMBINED TOTALS						
UNDER 400						
400-999					37.694	37.694
1,000-1,999					143.760	143.760
2,000-2,999					252.307	252.307
3,000-3,999					129.768	129.768
4,000-4,999					78.901	78.901
5,000-9,999					38.651	38.651
10,000-14,999						
15,000-19,999						
20,000-29,999						
30,000-39,999						
40,000 AND OVER						
TOTAL					681.081	681.081

Figure 10 STATE-MILEAGE-506 Partial Output

ROADLOG INTERSTATE LOOPS

MILE POST	SECTION DESCRIPTION	PROJECT NUMBER	RE	CY NO	LOCATIONS	CITY NMBR	YEARS BT IM	SURF TYPE	WIDTH SF RD	*** LENGTH *** ROUTE	SECTION	
INTERSTATE LOOP # 1												
PRIMARY ROUTE 00002												
LOOP ON INTERSTATE ROUTE 00094 FROM MILEPOST 000+0.000 TO 023+0.255												
000+0.000	JCT I 90 PINE HILL INT BEG 4LDH	I 94 1 14		56	3		67 67	6201	76 76	.343	.343	OUT
000+0.343	YELLOWSTONE COUNTY	I 94 1 11		56	3		67 67	6201	76 76	5.452	5.452	OUT
006+0.194	HUNTLEY INT JCT FAS 522 YELL CO	I 94 1 11		56	3		67 67	6201	76 76	.689	.689	OUT
006+0.883	YELLOWSTONE COUNTY	I 94 1 13		56	3		68 68	6201	76 76	6.542	6.542	OUT
013+0.400	YELLOWSTONE COUNTY	I 94 1 17		56	3		68 68	6201	76 76	1.407	1.407	OUT
014+0.813	BALLANTINE INT YELLOWSTONE CO	I 94 1 17		56	3		68 68	6201	76 76	8.414	8.414	OUT
023+0.254	US 310 US 10		DS									

*** MILEAGES FOR LOOP ***

OUTSIDE FEDERAL RESERV.	22.847
URBAN	0.000
ALL OTHER	0.000
TOTAL	22.847

INTERSTATE LOOP # 2												
PRIMARY ROUTE 00002												
LOOP ON INTERSTATE ROUTE 00094 FROM MILEPOST 098+0.225 TO 117+0.854												
098+0.225	JCT FAP 2 ROSEBUD CO CONN	I 94 3 26		44	3		71 71	4251	24 36	.373	.373	OUT
098+0.598	BEGIN FOUR LANES ROSEBUD CO	I 94 3 26		44	3		71 71	4251	76 76	5.805	5.805	OUT
103+0.956	JCT FAS 447 W ROSEBUD INT ROSEBUD	I 94 3 26		44	3		71 71	4251	76 76	2.841	2.841	OUT
106+0.796	JCT FAP 2 E ROSEBUD INT ROSEBUD CO	I 94 3 26		44	3		71 71	4251	76 76	.260	.260	OUT
107+0.056	ROSEBUD CO	I 94 3 23		44	3		71 71	4251	76 76	7.514	7.514	OUT
114+0.550	END FOUR LANES ROSEBUD CO	I 94 3 23		44	3		71 71	4251	44 44	.733	.733	OUT
115+0.225	ROSEBUD COUNTY	I 94 3 3		44	3		62 62	4251	44 44	2.630	2.630	OUT

*** MILEAGES FOR LOOP ***

OUTSIDE FEDERAL RESERV.	20.156
URBAN	0.000
ALL OTHER	0.000
TOTAL	20.156

Figure 11 LIST-ILOOPS Output

TRUE MILEAGE FILE

1) LIST - this program prints a formatted list of the true mileage records that the user specifies. True mileage records pinpoint the location of reference posts on a specific system. One record is stored for each reference post, and defines the distance from that post to the beginning of the route on which it is located. An example of the output from this list is shown in Figure 12 on page 27.

a) Required parameters - there is one.
DATA - the user must specify the roadway system or system and route number (see page 5).

b) Optional parameters - there are two.
START-MILEPOINT, END-MILEPOINT - (see page 5). If this option is not specified, the entire system or route is processed.

c) In Sample 3 on page 28, we see an example of a typical request which a user might send to Montana Highway Traffic Safety to be processed.
This request would list the true mileage locations of each reference post on Secondary 289 which begins at Norris in Madison County and terminates at its intersection with US 191 in Gallatin County.

HIS TRUE MILEAGE LISTING

ROUTE NUMBER	REFERENCE POST	TRUE MILEAGE	DIST FROM PRECEDING	EFFECTIVE DATE	DATE OF UPDATE
P00008	0	0.000			
P00008	1	0.999	0.999		
P00008	2	1.999	1.000		
P00008	3	2.999	1.000		
P00008	4	3.998	0.999		
P00008	5	4.998	1.000		
P00008	6	5.998	1.000		
P00008	7	6.998	1.000		
P00008	8	7.999	1.001		
P00008	9	9.002	1.003		
P00008	10	10.005	1.003		
P00008	11	11.008	1.003		
P00008	12	11.993	0.985		
P00008	13	13.010	1.017		
P00008	14	14.002	0.992		
P00008	15	14.998	0.996		
P00008	16	15.994	0.996		
P00008	17	17.000	1.006		
P00008	18	18.000	1.000		
P00008	19	19.000	1.000		
P00008	20	20.000	1.000		
P00008	21	21.002	1.002		
P00008	22	22.002	1.000		
P00008	23	22.999	0.997		
P00008	24	23.999	1.000		03/13/74
P00008	25	24.999	1.000		03/13/74
P00008	26	25.999	1.000		03/13/74
P00008	27	26.929	0.930		03/13/74
P00008	28	27.923	0.994		03/13/74
P00008	29	28.929	1.006		03/13/74
P00008	30	29.925	0.996		03/13/74
P00008	31	30.928	1.003		03/13/74
P00008	32	31.933	1.005		03/13/74
P00008	33	32.914	0.981		03/13/74
P00008	34	33.844	0.930		03/13/74
P00008	35	34.771	0.927		03/13/74
P00008	36	35.797	1.026		03/13/74
P00008	37	36.893	1.096		03/13/74
P00008	38	37.803	0.910		03/13/74
P00008	39	38.804	1.001		03/13/74
P00008	40	39.841	1.037		03/13/74
P00008	41	41.391	1.550		03/13/74
P00008	42	42.390	0.999		03/13/74
P00008	43	42.876	0.486		03/13/74
P00008	44	43.876	1.000		03/13/74
P00008	45	44.876	1.000		03/13/74
P00008	46	45.904	1.028		03/13/74
P00008	47	46.919	1.015		03/13/74
P00008	48	47.903	0.984		03/13/74
P00008	49	48.903	1.000		03/13/74
P00008	50	49.925	1.022		03/13/74
P00008	51	50.916	0.991		03/13/74
P00008	52	51.894	0.978		03/13/74

Figure 12 TRUE MILEAGE LIST Output

(27)

REQUEST FOR ROADWAY ENVIRONMENT SUBSYSTEM INFORMATION

TO: Montana Highway Traffic Safety Division
Capital Station,
Helena, MT 59601

FROM: Montana Highway Patrol Bureau
Husted Center,
Helena, MT 59601

PROGRAM: TRUE MILEAGE LIST

REQUIRED PARAMETERS:

DATA: Federal Aid Secondary 289

OPTIONAL PARAMETERS:

START-MILEPOINT: 0 + 0.000

END-MILEPOINT: 29 + 0.025

SAMPLE 3

TRAFFIC FILE

1) LIST - this program provides a formatted list of traffic records specified by the user. One line is printed for each record which gives a section description and traffic volumes for three years. Either the oldest or the newest three years stored can be printed out. An example of the output is shown in Figure 13 on page 30.

a) Required parameters - there is one.
DATA - the user must specify the roadway system or system and route number (see page 5).

b) Optional parameters - there are four.
START-MILEPOINT, END-MILEPOINT - (see page 5). If this option is not specified, the entire system or route is processed.
LIST - if List 1 is specified, the oldest three years will be printed. If List 2 is specified, the newest three years will be printed. If this option is not specified, the program assumes List 1 is desired.
SELECT - (see pages 6, 7). Stipulate special restrictions you would like to impose on the records to be processed. A partial list of Traffic data elements for which Select relationships can be established is shown in List 2 on page 32. Data elements from the Roadlog file, List 1 on page 11, are also available.

c) In Sample 4 on page 31, we see an example of a typical request which a user might send to Montana Highway Traffic Safety to be processed.
This request would cause the program to list all Traffic records for the Federal Aid Interstate system, for which the % of commercial vehicles was 25% or greater, and the average daily traffic was 1000 vehicles or greater in 1974.

HIS TRAFFIC FILE LISTING -- 1971 THROUGH 1973

KEY	TRUE MILEAGE	SECTION DESCRIPTION	YR	ADT	OUT	PIC	COM	YR	ADT	OUT	PIC	COM	YR	ADT	OUT	PIC	COM	FUT	DHV	
			----FIRST YEAR----					---SECOND YEAR----					----THIRD YEAR----							
P00006000+0.000		IDAHO LN KANIKSU NF FH6 SANDERS CO	71	405	259	256	163	72	479	280	324	117	73	458	272	321	129		146	W
P00006010+0.394	10.398		71	489	259	256	163	72	522	280	324	117	73	500	272	321	129		146	R
P00006010+0.404	10.408	JCT FAS 202 SANDERS CO	71	569	211	264	157	72	586	237	316	124	73	570	210	329	149		146	W
P00006020+0.232	20.444		71	554	211	264	157	72	617	237	316	124	73	600	210	329	149		146	R
P00006029+0.922	29.908	TROUT CREEK NOT INC SANDERS CO	71	670	211	264	157	72	764	237	316	124	73	743	210	329	149		146	W
P00006037+0.813	37.812		71	588	211	264	157	72	651	237	316	124	73	663	210	329	149		146	R
P00006046+0.267	46.243		71	660	211	264	157	72	753	237	316	124	73	674	210	329	149		146	R
P00006047+0.526	47.505		71	576	211	264	157	72	681	237	316	124	73	685	210	329	149		146	R
P00006048+0.445	48.429		71	619	211	264	157	72	728	237	316	124	73	708	210	329	149		146	R
P00006049+0.085	49.072		71	700	211	264	157	72	823	237	316	124	73	803	210	329	149		146	R
P00006049+0.087	49.074	JCT FAS 471 SANDERS CO	71	850	211	264	157	72	861	237	316	124	73	841	210	329	149		146	W
P00006049+0.937	49.924		71	977	211	264	157	72	990	237	316	124	73	963	210	329	149		146	R
P00006050+0.498	50.458	THOMPSON FALLS CL MAIN ST	71	1005	211	264	157	72	1292	237	316	124	73	1357	210	329	149		146	T
P00006050+0.799	50.759												73	3880						M
P00006051+0.000	50.940												73	4230						M
P00006051+0.212	51.152												73	2270						M
P00006051+0.570	51.510	THOMPSON FALLS CL SANDERS CO	71	1636	211	264	157	72	1618	237	316	124	73	1699	210	329	149		146	W
P00006053+0.018	52.984		71	1500	211	264	157	72	1482	237	316	124	73	1464	210	329	149		146	R
P00006056+0.085	55.063		71	1012	211	264	157	72	1263	237	316	124	73	1228	210	329	149		146	R
P00006056+0.095	55.073	JCT FAS 556 SANDERS CO	71	820	211	264	157	72	1023	237	316	124	73	1020	210	329	149		149	W
P00006062+0.198	62.178		71	783	211	264	157	72	796	237	316	124	73	775	210	329	149		149	R
P00006071+0.804	71.800		71	991	211	264	157	72	975	237	316	124	73	980	210	329	149		149	R
P00006075+0.707	75.717	PLAINS CL RAILROAD ST	71	1327	211	264	157	72	1300	237	316	124	73	1365	210	329	149		149	T
P00006075+0.850	75.860												73	2110						M
P00006075+0.964	75.974												73	3010						M
P00006076+0.050	76.063												73	3500						M
P00006076+0.261	76.274	PLAINS CL SANDERS CO	71	1459	77	265	136	72	1558	92	284	159	73	1900	81	270	140		149	W
P00006076+0.631	76.644		71	1459	77	265	136	72	1558	92	284	159	73	1412	81	270	140		149	R
P00006076+0.641	76.654	JCT FAP 36 SANDERS CO	71	1046	82	244	138	72	1103	98	276	158	73	1083	95	246	119		149	W
P00006085+0.022	85.016		71	800	82	244	138	72	838	98	276	158	73	920	95	246	119		149	R
P00006085+0.033	85.027	JCT FAS 461 SANDERS CO	71	573	82	244	138	72	604	98	276	158	73	582	95	246	119		149	W
P00006095+0.923	95.643		71	551	82	244	138	72	581	98	276	158	73	562	95	246	119		149	R
P00006095+0.934	95.654	JCT FAS 382 SANDERS CO	71	618	82	244	138	72	651	98	276	158	73	627	95	246	119		149	W
P00006109+0.475	109.180		71	748	82	244	138	72	788	98	276	158	73	759	95	246	119		149	R
P00006109+0.476	109.181	JCT FAS 212 SANDERS CO	71	865	82	244	138	72	912	98	276	158	73	878	95	246	119		149	W
P00006115+0.193	114.922	LAKE CO LN LAKE CO	71	878	82	244	138	72	1080	98	276	158	73	1040	95	246	119		149	W
P00006116+0.203	115.858	JCT FAP 5 NEAR RAVALLI	71	878	82	244	138	72	1080	98	276	158	73	1040	95	246	119		149	W

Figure 13 TRAFFIC LIST Output

REQUEST FOR ROADWAY ENVIRONMENT SUBSYSTEM INFORMATION

TO: Montana Highway Traffic Safety Division
Capital Station,
Helena, MT 59601

FROM: Federal Highway Administration
Helena,
Montana 59601

PROGRAM: TRAFFIC LIST

REQUIRED PARAMETERS:

DATA: Federal Aid Interstate System

OPTIONAL PARAMETERS:

SELECT: Please provide a list of all traffic sections for which the ADT was 1000 or greater and the traffic volume included at least 25% of commercial vehicles.

SAMPLE 4

PARTIAL LIST OF
TRAFFIC SELECT DATA ELEMENTS

KEY	ROUTE SYSTEM
ROUTE NUMBER	ROUTE SYSTEM & NUMBER
REFERENCE POST	DISTANCE
MILEPOINT	ACTUAL OR ESTIMATED
REMARK	YEAR 1
AVG DAILY TRAFFIC 1	% OUT OF STATE 1
% PICKUP 1	% COMMERCIAL 1
YEAR 2	AVG DAILY TRAFFIC 2
% OUT OF STATE 2	% PICKUPS 2
% COMMERCIAL 2	YEAR 3
AVG DAILY TRAFFIC 3	% OUT OF STATE 3
% PICKUPS 3	% COMMERCIAL 3
YEAR 4	AVG DAILY TRAFFIC 4
% OUT OF STATE 4	% PICKUPS 4
% COMMERCIAL 4	FUTURE FACTOR

LIST 2

TRAFFIC FILE (cont'd)

2) TRAFFIC-BY-SECTIONS - this report forms the main body of the annual Traffic by Sections report. It prints a listing of the traffic major sections, including the milepoint, description, county, section length, average daily traffic for three years, and current vehicle miles. An example of the output is shown in Figure 14 on page 34.

a) Required parameters - there is one.
   DATA - the user must specify the roadway system or system and route number (see page 5).

b) Optional parameters - there are two.
   START-MILEPOINT, END-MILEPOINT - (see page 5). If this option is not specified, the entire system or route is processed.

c) In Sample 5 on page 35. we see an example of a typical request which a user might send to Montana Highway Traffic Safety to be processed.
   This request would cause the program to list traffic records for Federal Aid Primary 10 (US 87) in Chouteau County. (The beginning and ending reference posts on US 87 in Chouteau County are listed as milepoints.)

MILE POST	SECTION DESCRIPTION	COUNTY	TRAFFIC TYPE	SECTION LENGTH	*******ADT******* 71	72	73	VEH MILES
0+0.000	IDAHO LN KANIKSU NF FH6 SANDERS CO							
			ALL VEHICLES		447	500	479	4985
		SANDERS	COMMERCIAL	10.408	72	58	61	643
			OUT OF STATE		115	140	130	1356
10+0.404	JCT FAS 202 SANDERS CO							
			ALL VEHICLES		586	644	626	12226
		SANDERS	COMMERCIAL	19.500	92	79	93	1821
			OUT OF STATE		123	152	131	2567
29+0.922	TROUT CREEK NOT INC SANDERS CO							
			ALL VEHICLES		625	707	687	13181
		SANDERS	COMMERCIAL	19.166	98	87	102	1963
			OUT OF STATE		131	167	144	2768
49+0.087	JCT FAS 471 SANDERS CO							
			ALL VEHICLES		943	1008	1001	1386
		SANDERS	COMMERCIAL	1.384	148	125	149	206
			OUT OF STATE		199	239	210	291
50+0.498	THOMPSON FALLS CL MAIN ST							
		SANDERS	ALL VEHICLES	1.052			2777	2921
51+0.570	THOMPSON FALLS CL SANDERS CO							
			ALL VEHICLES		1356	1429	1421	6487
		SANDERS	COMMERCIAL	4.563	212	177	211	966
			OUT OF STATE		286	338	298	1362
56+0.095	JCT FAS 556 SANDERS CO							
			ALL VEHICLES		914	943	942	18515
		SANDERS	COMMERCIAL	19.644	143	116	140	2758
			OUT OF STATE		192	223	197	3388
75+0.707	PLAINS CL RAILROAD ST							
		SANDERS	ALL VEHICLES	0.557			2512	1399
76+0.261	PLAINS CL SANDERS CO							
			ALL VEHICLES		1459	1558	1649	626
		SANDERS	COMMERCIAL	0.380	198	247	230	87
			OUT OF STATE		112	143	133	50
76+0.641	JCT FAP 36 SANDERS CO							
			ALL VEHICLES		922	970	1001	8382
		SANDERS	COMMERCIAL	8.373	127	153	119	997
			OUT OF STATE		75	95	95	796
85+0.033	JCT FAS 461 SANDERS CO							
			ALL VEHICLES		562	592	572	6078
		SANDERS	COMMERCIAL	10.627	77	93	68	723
			OUT OF STATE		46	58	54	577
95+0.934	JCT FAS 382 SANDERS CO							
			ALL VEHICLES		683	719	693	9374
		SANDERS	COMMERCIAL	13.527	94	113	82	1115
			OUT OF STATE		56	70	65	890
109+0.476	JCT FAS 212 SANDERS CO							
			ALL VEHICLES		871	996	959	5505
		SANDERS	COMMERCIAL	5.741	120	157	114	655
			OUT OF STATE		71	97	91	523
115+0.193	LAKE CO LN LAKE CO							

Figure 14 TRAFFIC-BY-SECTIONS Output

REQUEST FOR ROADWAY ENVIRONMENT SUBSYSTEM INFORMATION

TO: Montana Highway Traffic Safety Division
Capitol Station,
Helena, MT 59601

FROM: Highway Department
Choteau County
Fort Benton, MT

PROGRAM: TRAFFIC-BY-SECTIONS

REQUIRED PARAMETERS:

DATA: U.S. 87

OPTIONAL PARAMETERS:

START-MILEPOINT: 16+0.224

END-MILEPOINT: 89+0.418

SAMPLE 5

TRAFFIC FILE (cont'd)

3) Other Outputs

a) SUMMARY-BY-ROUTES - this report prints a summary of average daily traffic, vehicles miles, and % of total vehicle miles by route. An example of the output is shown in Figure 15 on page 37.

b) SUM-BY-COUNTY - this report prints a summary of total mileage and vehicles miles on the federal aid interstate, primary, and secondary systems by county. An example of the output is shown in Figure 16 on page 38.

1973
PRIMARY RURAL ROUTE SUMMARY

ROUTE NO	RURAL MILEAGE	AVERAGE DAILY TRAFFIC ALL VEHICLES	COMMER-CIAL	OUT OF STATE	*****VEHICLE MILES***** ALL VEHICLES	COMMER-CIAL	OUT OF STATE	% OF TOTAL VEH. MILES ALL VEHICLES	COMMER-CIAL	OUT OF STATE
00006	114.2	768	106	133	87724	12056	15164	100.00	100.00	100.00
NET TOTAL	114.2	768	106	133	87724	12056	15164	100.00	100.00	100.00

Figure 15 SUMMARY-BY-ROUTES Output

RURAL MILEAGE AND VEHICLE MILES OF TRAVEL BY COUNTY AND SYSTEM

COUNTY	FEDERAL AID SYSTEM INTERSTATE MILES	INTERSTATE VEHICLE MILES	PRIMARY MILES	PRIMARY VEHICLE MILES	SECONDARY MILES	SECONDARY VEHICLE MILES	TOTAL RURAL MILES	TOTAL RURAL VEHICLE MILES
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24			.936	973.440			.936	973.440
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45			113.313	86750.440			113.313	86750.440
46								
47								
48								
49								
50								
51								
52								
53								

Figure 16 SUM-BY-COUNTY Output

SUFFICIENCY FILE

1) LIST-BY-SECTIONS - prints a listing of the Sufficiency report file by roadway section. The Planning and Research Bureau of the Montana Department of Highways has adopted a sufficiency rating system in order to compare the sufficiency of existing rural highways with the latest design standards. The rating system takes into consideration the structural adequacy, the safety, and the traffic capacity of the highway. An example of the output is shown in Figure 17 on page 40.

a) Required parameters - there is one.
DATA - the user must specify the roadway system or system and route number (see page 5)

b) Optional parameters - there are two.
START-MILEPOINT, END-MILEPOINT - (see page 5). If this option is not specified, the entire system or route is processed.

c) In Sample 6 on page 41, we see an example of a typical request which a user might send to Montana Highway Traffic Safety to be processed.
This request would cause the program to list sufficiency data by roadway section for Federal Aid Primary 20 (Montana 16) from Glendive to Sidney. (The beginning and ending milepoints are indicated.)

FEDERAL AID PRIMARY ROUTE NUMBER 8

MILEPOINT	SECTION DESCRIPTION	COUNTY	FIN DIST	*YEAR* BT	IM	SECTION LENGTH	WIDTH SRF	RDY	SUF TYP	ADT	DHV	SERVICE VOLUME	----SUFFICIENCY RATINGS---- END	SRF	DRN	SAF	CAP	TOT	ADJ	DEFIC MILES
0+0.000	JCT FAI 90	POWELL	8	31	53	3.913	24	24	RMS	1134	147	249	0	13	6	1	21	41	39	2.3
3+0.914	JCT FAS 407	POWELL	8	64	64	7.362	32	32	PMS	1281	166	504	8	25	10	7	25	75	73	1.8
11+0.267	AVON	POWELL	8	33	58	11.942	22	24	RMS	1380	179	361	0	11	8	3	23	45	42	6.6
23+0.218	2.3 E ELLISTON	POWELL	8			2.363	UNDER CONSTRUCTION													
25+0.581	1.9 W L & C CO	POWELL	8			1.668	UNDER CONSTRUCTION													
27+0.319	0.3 W L & C CO	POWELL	8	31	55	.298	24	30	RMS	1474	191	261	0	11	4	1	19	35	31	.2
27+0.617	LEWIS & CLARK CO	LEWIS AND CLARK	7	31	35	6.567	24	30	PMS	1477	192	252	0	13	3	1	19	36	32	4.2
34+0.269	1.1 E END FHR 23	LEWIS AND CLARK	7	33	54	5.345	22	30	RMS	1955	254	367	0	15	8	3	20	46	40	2.9
39+0.654		LEWIS AND CLARK	7			3.983	CITY OF HELENA													
43+0.565		COIN P00003 193+0.000-195+0.340																		
46+0.476	HELENA	LEWIS AND CLARK	7	36	36	2.094	24	30	PMS	5941	712	524	0	11	3	3	10	27	16	1.5
48+0.571		LEWIS AND CLARK	7			1.289	CITY OF EAST HELENA													
49+0.860	EAST HELENA	LEWIS AND CLARK	7	36	36	2.962	24	30	PMS	2708	414	500	3	17	7	5	18	50	42	1.5
52+0.831	3.0 E EAST HELENA	LEWIS AND CLARK	7	69	69	1.670	40	40	PMS	2446	374	344	9	26	10	20	14	79	74	.4
54+0.482	JEFFERSON CO	JEFFERSON	7	69	69	1.514	40	40	PMS	2250	344	283	10	27	10	20	12	79	74	.3
55+0.995	BROADWATER CO	BROADWATER	7	69	69	1.139	40	40	PMS	1784	231	344	9	27	10	20	20	86	83	.2
57+0.135	1.1 E BROADWATER	BROADWATER	7	72	72	8.303	34	34	PMS	1761	228	568	9	24	10	20	24	87	84	1.1
65+0.436	0.7 S WINSTON	BROADWATER	7	65	65	11.541	32	32	PMS	1778	231	748	9	25	10	10	25	79	75	2.4
76+0.982		BROADWATER	7			1.108	CITY OF TOWNSEND													
78+0.114	TOWNSEND	BROADWATER	7	39	39	9.673	24	32	RMS	1534	199	731	0	12	10	20	26	68	64	3.1
87+0.738	TOSTON APPR RD	BROADWATER	7	50	51	11.260	24	26	RMS	1172	152	585	4	16	10	20	26	76	74	2.7
98+0.993	0.8 E JCT FAS 437	BROADWATER	7	52	52	8.748	24	28	RMS	1478	192	478	3	17	10	20	24	74	71	2.3
107+0.697	0.2 N FAI 90	BROADWATER	7	68	68	.196	40	40	RMS	1687	219	103	10	28	10	4	0	52	47	.1
107+0.893	JCT FAI 90	BROADWATER	7	68	68	.308	40	40	RMS	896	116	118	10	28	10	1	15	64	64	.1
108+0.202	0.3 S FAI 90	BROADWATER	7	52	52	.653	24	28	RMS	896	116	558	4	17	10	20	27	78	78	.1
108+0.855	1.0 S FAI 90	BROADWATER	7	68	68	.320	44	44	RMS	896	116	118	10	28	10	1	15	64	64	.1
109+0.174		*** ROADLOG RECORD MISSING ***																		
	ROUTE TOTAL					99.839													34	33.8
	SYSTEM TOTAL					99.839													34	33.8

Figure 17 SUFFICIENCY LIST-BY-SECTIONS Output

REQUEST FOR ROADWAY ENVIRONMENT SUBSYSTEM INFORMATION

TO: Montana Highway Traffic Safety Division
Capital Station,
Helena, MT. 59601

FROM: City Engineer,
Glendive,
Montana

PROGRAM: SUFFICIENCY LIST-BY-SECTIONS

REQUIRED PARAMETERS:

DATA: Montana 16

OPTIONAL PARAMETERS:

START-MILEPOINT: 0+0.000

END-MILEPOINT: 52+0.436

SAMPLE 6

PARTIAL LIST OF SUFFICIENCY SELECT DATA ELEMENTS

KEY	ROUTE SYSTEM
ROUTE NUMBER	ROUTE SYSTEM & NUMBER
REFERENCE POST	DISTANCE
MILEPOINT	DESCRIPTION
DESIGN SPEED	TERRAIN
AVERAGE SPEED	SIGHT DISTANCE
STOPPING DISTANCE	# OF CURVES
# NARROW BRIDGES	FOUNDATION RATING
SURFACE RATING	DRAINAGE RATING
SECTION LENGTH	EFFECTIVE DATE

LIST 3

SUFFICIENCY FILE (cont'd)

2) Other outputs

a) LIST-BY-RATING - this program lists sections of roadway in order by adjusted sufficiency rating. An example of the output is shown in Figure 18 on page 44.

b) LIST-BY-DISTRICT - this program lists sections of roadway in order by adjusted sufficiency rating in each financial district. An example of the output is shown in Figure 19 on page 45.

c) RATING-BY-DISTRICT - this program prints a table of financial districts showing the % of sufficiency miles. An example of the output is shown in Figure 20 on page 46.

d) DEF-MILES-BY-COUNTY - this program prints a summary of the deficiency miles in each county. An example of the output is shown in Figure 21 on page 47.

e) MAP-TABLES - this program lists sections of roadway giving sufficiency data in a tabular format. An example of the output is shown in Figure 22 on page 48.

SUFFICIENCY RATINGS BY SECTIONS -- STATEWIDE

RT-#	MILEPOINT	SECTION DESCRIPTION	COUNTY	FIN YEARS DIST	BT	IM	SECTION LENGTH	WIDTH SRF	ROY	SUF TYP	ADT	DHV	SERVICE VOLUME	----SUFFICIENCY RATINGS---- END	SRF	DRN	SAF	CAP	TOT	ADJ	DEFIC MILES
P008	46+0.476	HELENA	LEWIS AND CLARK	7	36	36	2.094	24	30	PMS	5941	712	524	0	11	3	3	10	27	16	1.5
P008	27+0.319	0.3 W L & C CO	POWELL	8	31	55	.298	24	30	RMS	1474	191	261	0	11	4	1	19	35	31	.2
P008	27+0.617	LEWIS & CLARK CO	LEWIS AND CLARK	7	31	35	6.567	24	30	PMS	1477	192	252	0	13	3	1	19	36	32	4.2
P008	0+0.000	JCT FAI 90	POWELL	8	31	53	3.913	24	24	RMS	1134	147	249	0	13	6	1	21	41	39	2.3
P008	34+0.269	1.1 E END FHR 28	LEWIS AND CLARK	7	33	54	5.345	22	30	RMS	1955	254	367	0	15	6	3	20	46	40	2.9
P008	49+0.860	EAST HELENA	LEWIS AND CLARK	7	36	36	2.962	24	30	PMS	2708	414	500	3	17	7	5	18	50	42	1.5
P008	11+0.267	AVON	POWELL	8	33	58	11.942	22	24	RMS	1380	179	361	0	11	8	3	23	45	42	6.6
P008	107+0.697	0.2 N FAI 90	BROADWATER	7	68	68	.196	40	40	RMS	1687	219	103	10	28	10	4	0	52	47	.1
P008	107+0.893	JCT FAI 90	BROADWATER	7	68	68	.308	40	40	RMS	896	116	118	10	28	10	1	15	64	64	.1
P008	78+0.114	TOWNSEND	BROADWATER	7	39	39	9.673	24	32	RMS	1534	199	731	0	12	10	20	26	68	64	3.1
P008	108+0.855	1.0 S FAI 90	BROADWATER	7	68	68	.320	44	44	RMS	896	116	118	10	28	10	1	15	64	64	.1
P008	98+0.993	0.8 E JCT FAS 437	BROADWATER	7	52	52	8.748	24	28	RMS	1478	192	478	3	17	10	20	24	74	71	2.3
P008	3+0.914	JCT FAS 407	POWELL	8	64	64	7.362	32	32	PMS	1281	166	504	8	25	10	7	25	75	73	1.8
P008	87+0.738	TOSTON APPR RD	BROADWATER	7	50	51	11.260	24	26	RMS	1172	152	585	4	16	10	20	26	76	74	2.7
P008	54+0.482	JEFFERSON CO	JEFFERSON	7	69	69	1.514	40	40	PMS	2250	344	283	10	27	10	20	12	79	74	.3
P008	52+0.831	3.0 E EAST HELENA	LEWIS AND CLARK	7	69	69	1.670	40	40	PMS	2446	374	344	9	26	10	20	14	79	74	.4
P008	65+0.436	0.7 S WINSTON	BROADWATER	7	65	65	11.541	32	32	PMS	1778	231	748	9	25	10	10	25	79	75	2.4
P008	108+0.202	0.3 S FAI 90	BROADWATER	7	52	52	.653	24	28	RMS	896	116	558	4	17	10	20	27	78	78	.1
P008	55+0.995	BROADWATER CO	BROADWATER	7	69	69	1.139	40	40	PMS	1784	231	344	9	27	10	20	20	86	83	.2
P008	57+0.135	1.1 E BROADWATER	BROADWATER	7	72	72	8.303	34	34	PMS	1761	228	568	9	24	10	20	24	87	84	1.1
P008	25+0.581	1.9 W L & C CO	POWELL	8			1.668	UNDER CONSTRUCTION													
P008	23+0.218	2.3 E ELLISTON	POWELL	8			2.363	UNDER CONSTRUCTION													
		SYSTEM TOTAL					99.839													34	33.8

Figure 18 SUFF LIST-BY-RATING Output

FINANCIAL DISTRICT NUMBER 7

RT-#	MILEPOINT	SECTION DESCRIPTION	COUNTY	FIN YEARS DIST	BT	IN	SECTION LENGTH	WIDTH SRF	RDY	SUF TYP	ADT	DHV	SERVICE VOLUME	----SUFFICIENCY RATINGS---- FND	SRF	ORN	SAF	CAP	TOT	ADJ	DEFIC MILES
P008	46+0.476	HELENA	LEWIS AND CLARK	7	36	36	2.094	24	30	PMS	5941	712	524	0	11	3	3	10	27	16	1.5
P008	27+0.617	LEWIS & CLARK CO	LEWIS AND CLARK	7	31	35	6.567	24	30	PMS	1477	192	252	0	13	3	1	19	36	32	4.2
P008	34+0.269	1.1 E END FHR 28	LEWIS AND CLARK	7	33	54	5.345	22	30	PMS	1955	254	367	0	15	8	3	20	46	40	2.9
P008	49+0.860	EAST HELENA	LEWIS AND CLARK	7	36	36	2.962	24	30	PMS	2708	414	500	3	17	7	5	18	50	42	1.5
P008	107+0.697	0.2 N FAI 90	BROADWATER	7	68	63	.196	40	40	RMS	1687	219	103	10	28	10	4	0	52	47	.1
P008	108+0.855	1.0 S FAI 90	BROADWATER	7	68	68	.320	44	44	RMS	896	116	118	10	28	10	1	15	64	64	.1
P008	107+0.893	JCT FAI 90	BROADWATER	7	68	68	.308	40	40	RMS	896	116	118	10	28	10	1	15	64	64	.1
P008	78+0.114	TOWNSEND	BROADWATER	7	39	39	9.673	24	32	PMS	1534	199	731	0	12	10	20	26	68	64	3.1
P008	98+0.993	0.8 E JCT FAS 437	BROADWATER	7	52	52	8.748	24	28	RMS	1478	192	478	3	17	10	20	24	74	71	2.3
P008	87+0.738	TOSTON APPR RD	BROADWATER	7	50	51	11.260	24	26	RMS	1172	152	585	4	16	10	20	26	76	74	2.7
P008	54+0.482	JEFFERSON CO	JEFFERSON	7	69	69	1.514	40	40	PMS	2250	344	283	10	27	10	20	12	79	74	.3
P008	52+0.831	3.0 E EAST HELENA	LEWIS AND CLARK	7	69	69	1.670	40	40	PMS	2446	374	344	9	26	10	20	14	79	74	.4
P008	65+0.436	0.7 S WINSTON	BROADWATER	7	65	65	11.541	32	32	PMS	1778	231	748	9	25	10	10	25	79	75	2.4
P008	108+0.202	0.3 S FAI 90	BROADWATER	7	52	52	.653	24	28	RMS	896	116	558	4	17	10	20	27	78	78	.1
P008	55+0.995	BROADWATER CO	BROADWATER	7	69	69	1.139	40	40	PMS	1784	231	344	9	27	10	20	20	86	83	.2
P008	57+0.135	1.1 E BROADWATER	BROADWATER	7	72	72	8.303	34	34	PMS	1761	228	568	9	24	10	20	24	87	84	1.1
		DISTRICT TOTAL					72.293													32	22.9

FINANCIAL DISTRICT NUMBER 8

RT-#	MILEPOINT	SECTION DESCRIPTION	COUNTY	FIN YEARS DIST	BT	IN	SECTION LENGTH	WIDTH SRF	RDY	SUF TYP	ADT	DHV	SERVICE VOLUME	----SUFFICIENCY RATINGS---- FND	SRF	ORN	SAF	CAP	TOT	ADJ	DEFIC MILES
P008	27+0.319	0.3 W L & C CO	POWELL	8	31	55	.298	24	30	RMS	1474	191	261	0	11	4	1	19	35	31	.2
P008	0+0.000	JCT FAI 90	POWELL	8	31	53	3.913	24	24	RMS	1134	147	249	0	13	6	1	21	41	39	2.3
P008	11+0.267	AVON	POWELL	8	33	58	11.942	22	24	RMS	1380	179	361	0	11	8	3	23	45	42	6.6
P008	3+0.914	JCT FAS 407	POWELL	8	64	64	7.362	32	32	PMS	1281	166	504	8	25	10	7	25	75	73	1.8
P008	25+0.581	1.9 W L & C CO	POWELL	8			1.668	UNDER CONSTRUCTION													
P008	23+0.218	2.3 E ELLISTON	POWELL	8			2.363	UNDER CONSTRUCTION													
		DISTRICT TOTAL					27.546													40	10.9
		SYSTEM TOTAL					99.839													34	33.8

Figure 19 SUFF LIST-BY-DISTRICT Output

MILES OF RURAL HIGHWAY
DISTRIBUTED BY ADJUSTED SUFFICIENCY RATING
IN TEN PERCENT INCREMENTS

PERCENT SUFFICIENT		FINANCIAL DISTRICTS 1	2	3	4	5	6	7	8	9	10	11	12	TOTALS	ACCUM. TOTALS
0-10 PERCENT	MILES														
	%														
11-20 PERCENT	MILES							2.0						2.0	2.0
	%							2.9						2.1	2.1
21-30 PERCENT	MILES														2.0
	%														2.1
31-40 PERCENT	MILES							11.9	4.2					16.1	18.2
	%							16.5	15.3					16.1	18.2
41-50 PERCENT	MILES							3.1	11.9					15.1	33.3
	%							4.4	43.4					15.1	33.4
51-60 PERCENT	MILES														33.3
	%														33.4
61-70 PERCENT	MILES							10.3						10.3	43.6
	%							14.2						10.3	43.7
71-80 PERCENT	MILES							35.3	7.3					42.7	86.3
	%							48.9	26.7					42.8	86.5
81-90 PERCENT	MILES							9.4						9.4	95.8
	%							13.1						9.5	96.0
91-100 PERCENT	MILES								4.0					4.0	99.8
	%								14.6					4.0	100.0
TOTAL PERCENT	MILES							72.2	27.5					99.8	
	%							100.0	100.0					100.0	

Figure 20 SUFF RATING-BY-DISTRICT Output

----- RURAL DEFICIENT MILEAGE BY COUNTY -----

FINANCIAL DISTRICT	-----COUNTY----	RURAL MILEAGE	DEFICIENT MILEAGE	PERCENT DEFICIENT
1	FLATHEAD	0.000	0.000	00.0
1	LAKE	0.000	0.000	00.0
1	LINCOLN	0.000	0.000	00.0
1	TOTAL	0.000	0.000	00.0
2	BLAINE	0.000	0.000	00.0
2	GLACIER	0.000	0.000	00.0
2	HILL	0.000	0.000	00.0
2	LIBERTY	0.000	0.000	00.0
2	TOOLE	0.000	0.000	00.0
2	TOTAL	0.000	0.000	00.0
3	DANIELS	0.000	0.000	00.0
3	PHILLIPS	0.000	0.000	00.0
3	ROOSEVELT	0.000	0.000	00.0
3	SHERIDAN	0.000	0.000	00.0
3	VALLEY	0.000	0.000	00.0
3	TOTAL	0.000	0.000	00.0
4	DAWSON	0.000	0.000	00.0
4	MCCONE	0.000	0.000	00.0
4	PRAIRIE	0.000	0.000	00.0
4	RICHLAND	0.000	0.000	00.0
4	WIBAUX	0.000	0.000	00.0
4	TOTAL	0.000	0.000	00.0
5	FERGUS	0.000	0.000	00.0
5	GARFIELD	0.000	0.000	00.0
5	PETROLEUM	0.000	0.000	00.0
5	TOTAL	0.000	0.000	00.0
6	CASCADE	0.000	0.000	00.0
6	CHOUTEAU	0.000	0.000	00.0
6	JUDITH BASIN	0.000	0.000	00.0
6	PONDERA	0.000	0.000	00.0
6	TETON	0.000	0.000	00.0
6	TOTAL	0.000	0.000	00.0
7	BROADWATER	52.141	12.194	23.4
7	JEFFERSON	1.514	0.317	20.9
7	LEWIS AND CLARK	18.638	10.447	56.1
7	TOTAL	72.293	22.958	31.8
8	GRANITE	0.000	0.000	00.0
8	MINERAL	0.000	0.000	00.0
8	MISSOULA	0.000	0.000	00.0
8	POWELL	27.546	10.909	39.6
8	RAVALLI	0.000	0.000	00.0
8	SANDERS	0.000	0.000	00.0
8	TOTAL	27.546	10.909	39.6

Figure 21 SUFF DEF-MILES-BY-COUNTY Output

BEGINNING MILE POST	0.0	3.9	11.2	23.2	25.5	27.3	27.6	34.2	39.6	43.5	46.4	48.5	49.8	52.8	54.4	55.9	57.1
LENGTH	3.9	7.3	11.9	2.3	1.6	0.2	6.5	5.3	3.9	2.9	2.0	1.2	2.9	1.6	1.5	1.1	8.3
YEAR BUILT	31	54	33	U	U	31	31	33	U	C	36	U	36	69	69	69	72
YEAR IMPROVED	53	64	58	N	N	55	35	54	R	D	36	R	36	69	69	69	72
SURFACE WIDTH	24	32	22	D C	D C	24	24	22	B	I	24	B	24	40	40	40	34
ROADWAY WIDTH	24	32	24	F D	F D	30	30	30	A	N	30	A	30	40	40	40	34
SURFACE TYPE	RMS	RMS	RMS	R N	R N	RMS	RMS	RMS	N	C	RMS	N	RMS	RMS	RMS	RMS	RMS
ADT	1134	1281	1380	S	S	1474	1477	1955		I	5941		2708	2446	2250	1784	1761
DHV	147	166	179	T	T	191	192	254		D	712		414	374	344	231	228
SERVICE VOLUME	249	504	361	R	R	261	252	367		E	524		500	344	283	344	568
FOUNDATION - 10	0	8	0	U	U	0	0	0		N	0		3	9	10	9	9
SURFACE - 30	13	25	11	C	C	11	13	15		T	11		17	26	27	27	24
DRAINAGE - 10	6	10	8	T	T	4	3	8			3		7	10	10	10	10
SAFETY - 20	1	7	3	I	I	1	1	3			3		5	20	20	20	20
CAPACITY - 30	21	25	23	O	O	19	19	20			10		18	14	12	20	24
SUFFICIENCY RATING	41	75	45	N	N	35	36	46			27		50	79	79	86	87
ADJUSTED RATING	39	73	42			31	32	40			16		42	74	74	83	84
DEFICIENT MILEAGE	2.30	1.84	6.56			.19	4.20	2.88			1.52		1.48	.35	.31	.15	1.07

Figure 22 SUFF MAP-TABLES Output

BRIDGE FILE

1) LIST - this program prints a tabular listing of selected records from the Bridge file. Because of the large number of data elements which are stored for each bridge in the state, it is impossible to print all the data within a single line of output. There are, then, six output formats available which print different sets of fields. There are examples of each of the six outputs in Figures 23 through 28 on pages 50 through 55.

a) Required parameters - there are two.

DATA - the user must specify the roadway system or system and route number (see page 5).

LIST - the user must specify which of the output formats he desires. The options available are List 1, 2, 3, 4, 5, 6, or ALL. In the latter case, all six lists are provided.

b) Optional parameters - there are four.

START-MILEPOINT, END-MILEPOINT - (see page 5). If this option is not specified, the entire system or route is processed.

FIELD-LIST - the user may request or refuse a list of the data elements in the output being printed. If this option is not specified, the list will be provided.

SELECT - (see pages 6, 7). Stipulate special restrictions you would like to impose on the records to be processed. A partial list of the Bridge data elements for which Select relationships can be established is shown in List 4 on page 57. Data elements from the Roadlog file, List 1 on page 11, and the Traffic file, List 2 on page 32, are also available.

c) In Sample 7 on page 56, we see an example of a typical request which a user might send to Montana Highway Traffic Safety to be processed.

This request would provide a list of the data elements in List 2 for all bridges on Federal Aid Primary 2 (US 10) in Yellowstone County on which the average daily traffic was 600 vehicles or greater and for which the Bridge roadway width was less than 24 feet. (The beginning and ending milepoints are listed.)

1

BRIDGE LIST

DATA=PRIMARY=B

FIELDS PRINTED FOR LIST=1 ARE:
- KEY
- REMARK
- COINCIDENT KEY
- MAINTENANCE DIVISION
- CONSTRUCTION DISTRICT
- DETOUR LENGTH
- FEATURES INTERSECTED
- MINIMUM VERTICAL CLEARANCE
- TOTAL HORIZONTAL CLEARANCE
- MAJOR OR MINOR
- LATITUDE
- LONGITUDE

2

-------KEY-------	REM	COINCIDENT-KEY	MAINT DIV	CONST DIST	DETOUR LENGTH	FEATURES-INTERSECTED	VERT CLEAR FT	VERT CLEAR IN	HOR CLEAR	MAJ MIN	LATITUDE DEG	LATITUDE MIN	LONGITUDE DEG	LONGITUDE MIN
P00008 006+0.2301			21	21	69	LIT BLACKFT R & BN RR	99	99	28.0	Y	46	32.9	112	40.7
P00008 011+0.8791			21	21	69	LITTLE BLACKFOOT RIVER	99	99	22.0	Y	46	35.9	112	36.9
P00008 013+0.1941			21	21	69	LITTLE BLACKFOOT RIVER	99	99	22.0	Y	46	35.7	112	35.1
P00008 022+0.2651			21	21	69	LITTLE BLACKFOOT RIVER	99	99	22.0	Y	46	33.4	112	24.5
P00008 036+0.9441			21	21	69	TENMILE CREEK	99	99	28.0	Y	46	34.6	112	9.3
P00008 045+0.5261	C	P00003 193+0.5402	21	21		I 15 CAPITAL INTERCHANGE	99	99	28.0	Y				
P00008 045+0.5262	C	P00003 193+0.5401	21	21		I 15 CAPITAL INTERCHANGE	99	99	28.0	Y				
P00008 047+0.8701			21	21	14	BN RY	99	99	30.0	Y	46	35.5	111	56.9
P00008 047+0.9261			21	21	14	BN RR	99	99	30.0	Y	46	35.5	111	56.9
P00008 049+0.2761			21	21	14	PRICKLEY PEAR CREEK	99	99	40.0	Y	46	35.4	111	55.1
P00008 076+0.3431			21	21	14	MISSOURI RIVER	99	99	22.0	Y	46	20.1	111	31.8
P00008 078+0.9461			21	21	14	IRRIGATION CANAL	99	99	36.0	Y	46	18.0	111	30.4
P00008 080+0.0541			21	21	14	DEEP CREEK	99	99	36.0	Y	46	16.7	111	29.9
P00008 080+0.6091			21	21	14	DEEP CREEK OVERFLOW	99	99	36.0	Y	46	16.3	111	29.5
P00008 087+0.2291			21	21	14	SIX MILE CREEK	99	99	36.0	Y	46	11.3	111	26.7
P00008 088+0.0551			21	21	14	BN RR	99	99	28.0	Y	46	10.5	111	26.4
P00008 088+0.2901			21	21	14	MISSOURI RIVER	99	99	28.0	Y	46	10.4	111	26.6
P00008 107+0.8931			21	21		I 90	99	99	40.0	Y	45	55.0	111	35.6
P00008 109+0.4231			21	21	1	BN RY	99	99	28.0	Y	46	35.9	112	2.1
P00008 109+0.4232	P		21	21		BN RY	99	99	29.8	Y	46	35.9	112	2.1

NUMBER OF RECORDS LISTED: 20

Figure 23 BRIDGE LIST 1 Output

BRIDGE LIST

DATA=PRIMARY=8

FIELDS PRINTED FOR LIST=2 ARE:
KEY
REMARK
COINCIDENT KEY
INVENTORY ROUTE
FACILITY CARRIED
PHYSICAL VULNERABILITY
CUSTODIAN
YEAR BUILT
YEAR IMPROVED
LANES ON STRUCTURE
LANES UNDER STRUCTURE
DESIGN LOAD
BRIDGE MEDIAN
SKEW
STRUCTURE FLARE
NAVIGATION CONTROL
VERTICAL NAVIGATION CONTROL
HORIZONTAL NAVIGATION CONTROL

-------KEY-------	REM	COINCIDENT-KEY	INVENTORY ROUTE	FACILITY CARRIED	PHY VUL	CUS	YR BLT	YR IMP	LANES ON	LANES UNDER	DESIGN LOAD	BDG MED	SKEW	STR FLR	NAV CON	V-NAV CNTRL	H-NAV CNTRL
P00008 006+0.2301			121000120	FAP 8	3	1	58		2		2016						
P00008 011+0.8791			121000120	FAP 8	2	1	33		2		1500		20				
P00008 013+0.1941			121000120	FAP 8	2	1	33		2		1500						
P00008 022+0.2651			121000120	FAP 8	2	1	33		2		1500						
P00008 036+0.9341			121000120	FAP 8	2	1	37		2		1500		30				
P00008 045+0.5261	C	P00003 193+0.5402															
P00008 045+0.5262	C	P00003 193+0.5401															
P00008 047+0.8701			121000120	FAP 8	2	1	36		2		1500		45				
P00008 047+0.9261			121000120	FAP 8	2	1	36		2		1500		45				
P00008 049+0.2761			121000120	FAP 8	2	1	34		2		1500		35				
P00008 076+0.3431			121000120	FAP 8	3	1	35		2		1500						
P00008 078+0.9461			121002870	FAP 8	2	1	31	39	2		1500						
P00008 080+0.0541			121002870	FAP 8	2	1	31	39	2		1500						
P00008 080+0.6091			121002870	FAP 8	2	1	31	39	2		1500		30				
P00008 087+0.2291			121002870	FAP 8	2	1	31	39	2		1500		30				
P00008 088+0.0551			121002870	FAP 8	2	1	55		2		2016						
P00008 088+0.2901			121002870	FAP 8	2	1	55		2		2016						
P00008 107+0.8931			121002870	FAP 8	3	1	68		2	4	2044						
P00008 109+0.4231			121000120	FAP 8	2	1	62		2		2016	1	5				
P00008 109+0.4232	P		121000120	FAP 8	2	1	36		2		1500	1	20				

NUMBER OF RECORDS LISTED: 20

Figure 24. BRIDGE LIST 2 Output

(15)

BRIDGE LIST

DATA=PRIMARY=B

FIELDS PRINTED FOR LIST=3 ARE:
KEY
REMARK
COINCIDENT KEY
SERVICE TYPE
MAIN STRUCTURE TYPE
APPROACH STRUCTURE TYPE
NUMBER OF MAIN SPANS
NUMBER OF APPROACH SPANS
MAXIMUM SPAN LENGTH
STRUCTURE LENGTH
LEFT SIDEWALK WIDTH
RIGHT SIDEWALK WIDTH
BRIDGE ROADWAY WIDTH
BRIDGE DECK WIDTH
STATION NUMBER
PROJECT NUMBER

-------KEY-------	REM	COINCIDENT-KEY	SERV TYPE	MAIN STR TYPE	APCH STR TYPE	NO. MAIN SPAN	NO. APCH SPAN	MAX SPAN LENGTH	STRUCT LENGTH	LEFT WALK WIDTH	RIGHT WALK WIDTH	BRIDGE ROAD WIDTH	BRIDGE DECK WIDTH	STATION NUMBER	PROJECT-NUMBER
P00008 006+0.2301			17	302		6	3	57	462			28.0	29.4	32219	F-FG 249 7
P00008 011+0.8791			15	104		3		35	107			22.0	25.0	63368	FAP 249 B
P00008 013+0.1941			15	104		3		31	95			22.0	24.8	70325	FAP 249 B
P00008 022+0.2651			15	104		2		29	59			22.0	25.0	118265	FAP 249 B
P00008 036+0.9441			15	104		3		33	102			28.0	31.0	91803	FAP 249 C
P00008 045+0.5261	C	P00003 193+0.5402													
P00008 045+0.5262	C	P00003 193+0.5401													
P00008 047+0.8701			12	104	101	3	2	40	150		5.0	30.0	38.0	12683	WPGH 77 A
P00008 047+0.9261			12	104	101	3	2	62	212		5.0	30.0	38.0	12980	FAGH 77 A
P00008 049+0.2761			15	104		2		33	67	6.0	6.0	40.0	55.0	20162	NRM 77 B
P00008 076+0.3431			15	305		5		107	500	1.5	2.0	22.0	25.5	115035	F 77 10
P00008 078+0.9461			15	101		1		20	21			36.0	39.0	50402	FAP 204 C
P00008 080+0.0541			15	104		3		22	66			36.0	39.0	44407	FAP 204 C
P00008 080+0.6091			15	101		1		20	22			36.0	39.0	41476	FAP 204 C
P00008 087+0.2291			15	101		1		20	22			36.0	39.0	6394	FAP 204 C
P00008 088+0.0551			12	303	104	2	5	77	382			28.0	32.0	105420	FG 204 C
P00008 088+0.2901			15	303	104	6	2	125	690			28.0	32.0	104177	F 204 7
P00008 107+0.8931			11	402		4		86	299			40.0	43.0	97617	I 90 5 16 272
P00008 109+0.4231			12	502	104	1	4	52	206			28.0		1306	U-UG 376 3
P00008 109+0.4232	P		12	104	201	6		45	206		4.0	29.8	41.6	1310	WPGM 376

NUMBER OF RECORDS LISTED: 20

Figure 25 BRIDGE LIST 3 Output

BRIDGE LIST

DATA=PRIMARY=8

FIELDS PRINTED FOR LIST=4 ARE:
- KEY
- REMARK
- COINCIDENT KEY
- MINIMUM VERTICAL OVERCLEARANCE
- MINIMUM VERTICAL UNDERCLEARANCE
- MINIMUM LATERAL UNDERCLEARANCE
- WEARING SURFACE
- SURFACE DEPTH
- APPROACH GUARDRAIL
- MAIN GUARDRAIL
- POSTED SPEED LIMIT
- POSTED LOAD LIMIT
- DECK CONDITION
- SUPERSTRUCTURE
- SUBSTRUCTURE
- CHANNEL AND CHANNEL PROTECTION
- CULVERT AND RETAINING WALLS
- REMAINING LIFE
- OPERATING RATING
- APPROACH ALIGNMENT

-------KEY-------	REM	COINCIDENT-KEY	VERT OVER CLEAR FT	VERT OVER CLEAR IN	VERT UNDER CLEAR FT	VERT UNDER CLEAR IN	LATERAL UNDER CLEARANCE RIGHT	LATERAL UNDER CLEARANCE LEFT	WEAR SURF	SUR DEP	APCH RAIL	MAIN RAIL	SPEED LIMIT	LOAD LIMIT	DECK COND	SUP STR	SUB STR	CHAN	CUL	LIFE	OPER RATE	APCH ALIGN
P00008 006+0.2301			99	99			12.0		7001						7	7	7	8	N	35	699	8
P00008 011+0.8791			99	99			99.9		7001						5	5	5	7	N	10	699	8
P00008 013+0.1941			99	99			99.9		7001						6	6	6	7	N	10	699	8
P00008 022+0.2651			99	99			99.9		7001						6	6	6	7	N	10	699	8
P00008 036+0.9441			99	99			99.9		7001						7	7	7	8	N	14	699	8
P00008 045+0.5261	C	P00003 193+0.5402																				
P00008 045+0.5262	C	P00003 193+0.5401																				
P00008 047+0.8701			99	99	32		11.8		4131	5					8	8	8	N	N	15	637	7
P00008 047+0.9261			99	99	32		11.0		4131	5					8	8	8	N	N	13	637	8
P00008 049+0.2761			20				99.9		4131	4					7	8	8	8	N	11	699	8
P00008 076+0.3431			99	99			99.9		7001						7	8	7	8	N	10	639	8
P00008 078+0.9451			99	99			99.9		4131	3					7	8	8	N	N	1	697	8
P00008 080+0.0541			99	99			99.9		4131	3					7	7	7	N	N	6	699	8
P00008 080+0.6091			99	99			99.9		4131	2					7	8	7	N	N	6	693	8
P00008 087+0.2291			99	99			99.9		4131	2					7	8	8	N	N	6	694	8
P00008 088+0.0551			99	99	23		12.4		4131	1					7	7	7	N	N	32	699	7
P00008 088+0.2301			99	99			99.9		4131	1					7	7	7	8	N	32	699	8
P00008 107+0.8931			99	99	17	8		30.0	7001						8	8	8	N	N	45	696	8
P00008 109+0.4231			99	99	22		10.4		7001						8	8	8	N	N	39	686	8
P00008 109+0.4232	P		99	99	23		10.0		7001						6	5	6	N	N	13	637	8

NUMBER OF RECORDS LISTED: 20

Figure 26 BRIDGE LIST 4 Output

BRIDGE LIST

DATA=PRIMARY=B

FIELDS PRINTED FOR LIST=5 ARE:
- KEY
- REMARK
- COINCIDENT KEY
- INVENTORY RATING
- STRUCTURAL CONDITION
- DECK GEOMETRY
- UNDERCLEARANCES
- SAFE LOAD CAPACITY
- WATERWAY ADEQUACY
- APPROACH ALIGNMENT RATING
- YEAR OF NEED IMPROVEMENT
- TYPE OF SERVICE
- TYPE OF WORK
- IMPROVEMENT LENGTH
- PROPOSED DESIGN LOAD
- PROPOSED ROAD WIDTH
- PROPOSED NUMBER OF LANES
- DESIGN ADT
- YEAR OF DESIGN ADT
- YEAR OF PROPOSED ADJACENT ROADWAY IMPROVEMENTS
- TYPE OF ROADWAY IMPROVEMENTS
- COST OF IMPROVEMENTS

-------KEY-------	REM	COINCIDENT-KEY	INV RAT	STR COND	DECK GEOM	UND CLR	SAFE LOAD CAPA	WAT ADE	APCH ALGN RAT	YR NO IM	TYP OF SER	TYPE OF WORK	IMPRVE LENGTH	PROP DSGN LOAD	PROP ROAD WDTH	PROP NO LANE	DESIGN ADT	YR DES ADT	YR RD IM	TYP RDY IMP	IMPRV COSTS
P00008 006+0.2301			236	7	7	N	8	8	7												
P00008 011+0.8791			115	5	4	N	7	8	9												
P00008 013+0.1941			115	6	4	N	7	8	9												
P00008 022+0.2651			115	6	4	N	7	8	9												
P00008 036+0.9441			115	7	7	N	7	8	9												
P00008 045+0.5261	C	P00003 193+0.5402																			
P00008 045+0.5262	C	P00003 193+0.5401																			
P00008 047+0.8701			115	7	4	6	6	N	4												
P00008 047+0.9261			115	8	8	N	7	N	5												
P00008 049+0.2761			115	8	8	N	7	8	9												
P00008 076+0.3431			115	7	4	N	5	8	4	77	1	311	500	5	44	2	3550	92			1064
P00008 078+0.9461			115	8	8	N	7	8	9												
P00008 080+0.0541			115	7	8	N	7	8	9												
P00008 080+0.6091			115	7	8	N	7	8	9												
P00008 087+0.2291			115	8	6	N	7	8	9												
P00008 088+0.0551			236	7	7	N	8	8	7												
P00008 088+0.2901			236	7	7	N	8	8	9												
P00008 107+0.8731			236	8	8	8	8	N	9												
P00008 109+0.4231			236	8	8	N	8	N	8												
P00008 109+0.4232	P		115	6	7	N	7	N	9												

NUMBER OF RECORDS LISTED: 20

Figure 27 BRIDGE LIST 5 Output

```
BRIDGE LIST

DATA=PRIMARY=R

        FIELDS PRINTED FOR LIST=6 ARE:
           KEY
           REMARK
           COINCIDENT KEY
           INSPECTION DATE
           STRUCTURE BATCH NUMBER
           MICROFILM SERIAL NUMBER
           DATE OF UPDATE
```


-------KEY-------	REM	COINCIDENT-KEY	INSPECTION DATE	STRUCT BATCH NUMBER	MICRO SERIAL NUMBER	DATE OF UPDATE
P00008 006+0.2301			2/23/73	080062	003950	
P00008 011+0.8791			2/23/73	080118	000947	
P00008 013+0.1941			2/23/73	080132	000949	
P00008 022+0.2651			2/22/73	080222	000951	
P00008 036+0.9441			2/22/73	080369	000924	
P00008 045+0.5261	C	P00003 193+0.5402				
P00008 045+0.5262	C	P00003 193+0.5401				
P00008 047+0.8701			3/01/73			
P00008 047+0.9261			2/28/73			
P00008 049+0.2761			2/27/73	080492	001163	
P00008 076+0.3431			1/17/72			
P00008 078+0.9461			2/27/73	080788	000710	
P00008 080+0.0541			2/27/73	080800	000709	
P00008 080+0.6091			2/27/73	080806	00708A	
P00008 087+0.2291			2/27/73	080872	000707	
P00008 088+0.0551			2/27/73	080880	003389	
P00008 088+0.2301			2/26/73	080882	003376	
P00008 107+0.8931			3/08/73	081079	008423	
P00008 109+0.4231			3/19/73	081095	005074	
P00008 109+0.4232	P		3/19/73	081095	001617	

NUMBER OF RECORDS LISTED: 20

Figure 28 BRIDGE LIST 6 Output

REQUEST FOR ROADWAY ENVIRONMENT SUBSYSTEM INFORMATION

TO: Montana Highway Traffic Safety Division
Capital Station,
Helena, MT 59601

FROM: Highway Department
Yellowstone County
Billings, Montana

PROGRAM: BRIDGE LIST

REQUIRED PARAMETERS:
DATA: U.S. 10

LIST: Data elements from List 2

OPTIONAL PARAMETERS:

START-MILEPOINT: 441+0.789

END-MILEPOINT: 494+0.000

SELECT: Please provide a list of all highway bridges with a maximum width of roadway of 24 feet and an ADT of 600 or greater.

SAMPLE 7

PARTIAL LIST OF
BRIDGE SELECT DATA ELEMENTS

KEY	ROUTE SYSTEM
REFERENCE POST	MILEPOINT
MINIMUM VERTICAL CLEARANCE	YEAR BUILT
TOTAL HORIZONTAL CLEARANCE	YEAR IMPROVED
DESIGN LOAD	# LANES ON
# LANES UNDER	# MAIN SPANS
MAXIMUM SPAN LENGTH	BRIDGE ROADWAY WIDTH
BRIDGE DECK WIDTH	WEARING SURFACE
SURFACE DEPTH	POSTED SPEED
POSTED LOAD	SUBSTRUCTURE
SUPERSTRUCTURE	INVENTORY RATING
STRUCTURAL CONDITION	REMAINING LIFE
SAFE LOAD CAPACITY	DECK CONDITION
VERT NAVIGATIONAL CLEARANCE	HORIZ NAVIGATIONAL CLEARANCE
MAIN STRUCTURE TYPE	APPROACH STRUCTURE TYPE

LIST 4

RAILROAD FILE

1) LIST - this program prints a tabular listing of selected records in the railroad file. One record is stored in the file for each railroad crossing in the state, and they contain information which describes and permits classification of the particular crossing. Because of the large number of data elements stored for each crossing, it is impossible to print out all the data within a single line of output. There are, then, three output formats available which print different sets of fields. There are examples of each of the three outputs in Figures 29, 30, and 31 on pages 59, 60 and 61.

a) Required parameters - there are two.

DATA - the user must specify the roadway system or system and route number (see page 5).

LIST - the user must specify which of the output formats he desires. There are three options, A, B, or C.

b) Optional parameters - there are three.

START-MILEPOINT, END-MILEPOINT - (see page 5). If this option is not specified, the entire system or route is processed.

SELECT - (see pages 6, 7). Stipulate special restrictions you would like to impose on the records to be processed. A partial list of the Railroad data elements for which Select relationships can be established is shown in List 5 on page 63. Data elements from the Roadlog file, List 1 on page 11, and the Traffic file, List 2 on page 32, are also available.

c) In Sample 8 on page 62, we see an example of a typical request that a user might send to Montana Highway Traffic Safety to be processed.

This request would provide a list of the data elements in List A for all railroad crossings in Missoula on Federal Aid Primary 2 (US 10) for which the number of daily passenger and freight trains combined would be 10 or greater. (The beginning and ending milepoints are listed.)

HIS RAILROAD FILE LIST = A

CARD AND KEY	SURVEY DATE	ROAD WIDTH	OR	*ROAD APPROACH ONE* RIGHT O	RIGHT P	LEFT O	LEFT P	DIS	O-SET	GRADE	LOC INT	VRT RES	OR	*ROAD APPROACH TWO* RIGHT O	RIGHT N	LEFT O	LEFT N	DIS	O-SET	GRADE	LOC INT	VRT RES
A100094072+0.110	062768	66	8	150	90	30	90	300	L 00	+ 0	0	0	4	150	90	30	90	300	L 00	+ 0	0	0
AM01033000+0.020	061774	29	3	90	90	90	90	100	L 00	- 3	2	1	7	90	46	90	25	100	L 00	+ 3	2	1
AM01033000+0.060	061874	32	7	90	15	90	10	300	L 00	+ 0	2	0	3	90	5	90	5	300	L 00	+ 0	2	0
AM01033000+0.080	062674	34	7	90	10	90	10	300	L 00	+ 0	2	0	3	90	10	90	30	300	L 00	+ 0	2	0
AM01033000+0.100	061874	32	3	90	15	90	10	300	L 00	+ 0	2	0	7	90	10	90	5	300	L 00	+ 0	0	0
AM01033000+0.400	061874	32	3	90	2	90	2	300	L 00	+ 0	2	0	7	90	90	90	90	300	L 00	+ 0	2	0
AM01073000+0.020	060674	16	8	90	90	90	90	300	L 00	+ 0	0	0	4	90	90	90	90	300	L 00	+ 0	0	0
AM01073000+0.040	060674	16	8	90	22	90	70	300	L 00	- 1	0	0	4	90	7	90	11	300	L 00	+ 1	0	0
AM01073000+0.060	060674	16	7	90	20	90	10	300	L 00	- 2	0	1	3	90	12	90	2	300	L 00	+ 2	0	1
AM02491000+0.120	092072	16	4	50	11	130	14	300	L 00	+ 0	0	0	8	50	12	130	15	300	L 00	+ 0	0	0
AM05013000+0.020	082671	30	8	90	20	90	30	300	L 00	- 1	0	0	4	90	90	90	90	300	L 00	+ 0	0	0
AM05013000+0.040	082671	30	8	80	90	100	90	300	L 00	- 1	0	0	4	80	90	100	90	300	L 00	+ 0	0	0
AM05047000+0.020	082671	32	7	90	30	90	20	300	L 00	+ 0	0	0	3	90	90	90	90	300	L 00	- 1	0	0
AM05064000+0.020	082471	32	2	90	20	90	25	300	L 00	+ 1	0	0	6	90	20	90	10	300	L 00	+ 0	0	0
AM05064000+0.040	081971	45	2	90	20	90	10	300	L 00	+ 1	0	0	6	90	20	90	25	300	L 00	+ 1	0	0
AM05064000+0.060	082471	16	2	90	10	90	16	300	L 00	+ 1	0	0	6	90	30	90	10	300	L 00	+ 1	0	0
AM05064000+0.080	082471	16	2	90	10	90	90	300	L 00	+ 0	0	0	6	90	90	90	90	100	L 00	+ 1	0	0
AM05093000+0.010	082571	26	7	90	30	90	5	300	L 00	+ 0	0	0	3	90	90	90	40	300	L 00	+ 0	0	0
AM05093000+0.020	082571	24	3	90	20	90	5	300	L 00	+ 1	0	0	7	90	90	90	30	300	L 00	+ 0	0	0
AM05093000+0.040	082571	26	3	90	20	90	10	300	L 00	+ 1	0	0	7	90	10	90	5	300	L 00	+ 1	0	0
AM05093000+0.080	082571	46	7	90	10	90	35	300	L 00	+ 0	0	0	3	90	20	90	25	300	L 00	- 1	0	0
AM09063000+0.020	051774	18	8	90	10	90	90	200	L 47	+ 0	2	0	4	90	90	90	0	200	L 47	+ 0	2	0
AM09080000+0.020	052374	28	2	90	5	90	15	300	L 00	+ 1	2	0	6	90	50	90	60	300	L 22	+ 1	2	0
AM09080000+0.040	052374	35	4	90	10	90	18	300	L 00	+ 4	0	0	8	90	5	90	25	300	L 00	+ 1	2	0
AM09080000+0.060	052374	24	2	90	25	90	15	300	L 00	+ 2	2	0	6	90	15	90	25	300	L 00	+ 0	0	0
AM11050000+0.020	062768	28	3	90	45	90	45	300	L 00	+ 0	0	0	7	90	45	93	45	300	L 00	+ 0	0	0
AM11050000+0.060	071370	24	4	90	45	90	45	300	L 00	+ 0	0	0	8	90	45	90	45	300	L 00	+ 0	0	0
AM11050000+0.080	071370	24	2	90	45	90	45	300	L 00	+ 0	0	0	6	90	45	90	45	300	L 00	+ 0	0	0
AM11050000+0.100	071370	24	8	90	45	90	45	300	L 00	+ 0	0	0	4	90	45	90	45	300	L 00	+ 0	0	0
AM11050000+0.120	071370	28	7	90	65	90	60	300	L 00	+ 0	0	0	3	90	90	90	90	200	L 00	+ 4	0	0
AM11050000+0.250	071470	36	7	90	20	90	15	300	L 00	- 3	0	0	3	90	25	90	20	150	L 00	+ 1	0	0
AM11095000+0.100	070970	32	1	90	90	90	90	300	L 00	- 1	0	0	5	90	90	90	90	300	L 00	- 1	0	0
AM12002000+0.020	042674	99	7	35	25	145	90	300	L 00	+ 0	0	0	3	35	75	145	20	300	L 00	+ 0	0	0
AM12002000+0.040	042671	30	1	90	60	90	90	300	L 00	- 1	0	0	5	90	12	90	15	300	L 00	+ 1	0	0
AM12002000+0.060	042671	32	2	65	60	115	90	300	L 00	- 1	0	1	6	65	7	115	20	300	L 00	+ 1	0	1
AM12002000+0.080	042671	99	2	145	7	35	75	300	L 00	- 1	0	0	6	145	24	35	90	300	L 00	+ 1	0	0
AM14032000+0.020	102070	25	2	80	90	100	45	300	L 00	- 1	0	0	6	80	90	100	15	300	L 00	+ 1	0	0
AM14071000+0.020	092370	18	2	108	10	72	34	300	L 00	+10	0	0	6	108	10	72	5	300	L 00	+ 9	0	0
AM14071000+0.040	092370	36	4	80	4	100	6	300	L 00	+10	0	0	8	80	13	100	4	300	L 00	+ 7	0	0
AM14071000+0.060	092370	34	3	90	6	90	4	300	L 00	+ 7	0	0	7	90	12	90	5	300	L 00	+ 5	0	0
AM14071000+0.080	092370	40	3	90	10	90	12	300	L 00	+ 4	0	0	7	90	22	90	7	300	L 00	+ 5	0	0
AM14071000+0.100	092370	36	2	113	4	67	18	300	L 00	+ 4	0	0	6	113	14	67	4	300	L 00	+ 4	0	0
AM14071000+0.120	092370	38	2	113	19	67	11	300	L 00	+ 3	0	0	6	113	11	67	8	300	L 00	+ 4	0	0
AM14071000+0.140	092370	36	2	93	7	87	4	300	L 00	+ 3	0	0	6	93	12	87	6	300	L 00	+ 3	0	0
AM14071000+0.160	092370	36	3	90	9	90	6	300	L 00	+ 5	0	0	7	90	5	90	12	300	L 00	+ 1	0	0
AM14071000+0.180	092370	34	3	90	2	90	8	300	L 00	+ 4	0	0	7	90	11	90	11	300	L 00	+ 1	0	0
AM14071000+0.200	092370	36	2	98	4	82	4	300	L 00	+ 3	0	0	6	98	11	82	11	300	L 00	+ 0	0	0
AM14071000+0.220	100770	72	3	125	15	55	20	300	L 00	+ 0	0	0	7	125	38	55	15	300	L 00	+ 1	0	0
AM14071000+0.240	100770	72	5	70	20	110	10	300	L 00	- 1	0	0	1	70	15	110	30	300	L 00	- 1	0	0
AM14071000+0.280	100670	60	6	40	90	140	20	300	L 00	+ 7	0	0	2	40	90	140	7	300	L 00	+ 5	0	0
AM14082000+0.020	092370	24	2	90	20	90	16	300	L 00	+ 0	0	0	6	90	68	90	68	300	L 00	+ 2	0	0
AM14124000+0.020	102070	16	3	90	90	90	90	300	L 00	+ 0	0	0	7	90	90	90	90	300	L 00	+ 0	0	0

Figure 29. R.R. CROSSING LIST A Output

HIS RAILROAD FILE LIST = B

CARD AND KEY	*RAILROAD TRAFFIC* DAILY PASS #	PASS SPD	FREIGHT #	FREIGHT SPD	SWITCH #	SWITCH SPD	WEEKLY PASS #	PASS SPD	FREIGHT #	FREIGHT SPD	SWITCH #	SWITCH SPD	SEASONAL PASS #	PASS SPD	FREIGHT #	FREIGHT SPD	SWITCH #	SWITCH SPD		LOCATION
BI00094072+0.110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	25	0	0	R	
BM01033000+0.020	0	0	2	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R	FRANKLIN ST
BM01033000+0.060	0	0	2	49	2	5	0	0	0	0	0	0	0	0	0	0	0	0	R	BANNOCK ST
BM01033000+0.080	0	0	2	49	2	5	0	0	0	0	0	0	0	0	0	0	0	0	R	REEDER ST
BM01033000+0.100	0	0	2	49	2	5	0	0	0	0	0	0	0	0	0	0	0	0	R	ORR ST
BM01033000+0.400	0	0	2	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R	HELENA ST
BM01073000+0.020	0	0	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R	3RD ST
BM01073000+0.040	0	0	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R	PEAT ST
BM01073000+0.060	0	0	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R	BAILEY ST
BM02491000+0.120	0	0	0	0	1	30	0	0	0	0	0	0	0	0	0	0	0	0	R	MAIN ST
BM05013000+0.020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	25	0	0	R	BROADWAY AVE
BM05013000+0.040	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	25	0	0	R	CARBON AVE
BM05047000+0.020	0	0	4	40	2	10	0	0	0	0	0	0	0	0	0	0	0	0	R	RIVER ST
BM05064000+0.020	0	0	0	0	0	0	0	0	4	30	0	0	0	0	0	0	0	0	R	MAIN ST
BM05064000+0.040	0	0	0	0	0	0	0	0	4	30	0	0	0	0	0	0	0	0	R	PARK ST
BM05064000+0.060	0	0	0	0	0	0	0	0	4	30	0	0	0	0	0	0	0	0	R	FIRST ST
BM05064000+0.080	0	0	0	0	0	0	0	0	4	30	0	0	0	0	0	0	0	0	R	NO NAME ST
BM05093000+0.010	0	0	0	0	0	0	0	0	4	30	0	0	0	0	0	0	0	0	R	TENTH ST
BM05093000+0.020	0	0	0	0	0	0	0	0	4	30	0	0	0	0	0	0	0	0	R	FIFTH ST
BM05093000+0.040	0	0	0	0	0	0	0	0	4	30	0	0	0	0	0	0	0	0	R	NINTH ST
BM05093000+0.080	0	0	0	0	0	0	0	0	4	30	0	0	0	0	0	0	0	0	R	EIGHTH ST
BM09063000+0.020	0	0	6	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	
BM09080000+0.020	2	20	8	20	6	20	0	0	0	0	0	0	0	0	0	0	0	0	U	4TH ST
BM09080000+0.040	0	0	6	25	1	25	0	0	0	0	0	0	0	0	0	0	0	0	U	WOODBURY ST
BM09080000+0.060	0	0	6	20	1	20	0	0	0	0	0	0	0	0	0	0	0	0	U	EIGHT ST
BM11050000+0.020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	5	0	0	R	MERRILL AVE
BM11050000+0.060	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	15	0	0	R	ANDERSON AVE
BM11050000+0.080	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	15	0	0	R	ALLARD ST
BM11050000+0.100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	5	0	0	R	SARGENT ST
BM11050000+0.120	0	0	10	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R	
BM11050000+0.250	2	50	8	50	10	50	0	0	0	0	0	0	0	0	0	0	0	0	R	ALLARD ST
BM11095000+0.100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	10	0	0	R	
BM12002000+0.020	0	0	12	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	MAIN ST
BM12002000+0.040	0	0	0	0	0	0	0	0	4	5	0	0	0	0	0	0	0	0	U	CEDAR ST
BM12002000+0.060	0	0	0	0	0	0	0	0	4	5	0	0	0	0	0	0	0	0	U	BIRCH ST
BM12002000+0.080	0	0	12	10	20	10	0	0	0	0	0	0	0	0	0	0	0	0	U	FOURTH ST
BM14032000+0.020	0	0	2	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R	
BM14071000+0.020	0	0	2	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	IDAHO ST
BM14071000+0.040	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	EVELYN ST
BM14071000+0.060	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	MONTANA ST
BM14071000+0.080	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	BOULEVARD ST
BM14071000+0.100	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	WASHINGTON ST
BM14071000+0.120	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	BROADWAY ST
BM14071000+0.140	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	JANEAUX ST
BM14071000+0.160	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	WATSON ST
BM14071000+0.180	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	WATER ST
BM14071000+0.200	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	SPRING ST
BM14071000+0.220	0	0	0	0	0	0	0	0	4	35	0	0	0	0	0	0	0	0	U	BOULEVARD ST
BM14071000+0.240	0	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	BOULEVARD ST
BM14071000+0.280	0	0	2	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	CREEK DRIVE
BM14032000+0.020	0	0	2	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R	

Figure 30 R R CROSSING LIST B Output

HIS RAILROAD FILE LIST = C

CARD AND KEY	INVEN. DATE	OPER. RR	CROSSING NUMBER	BRANCH NAME	MILEPOST	TRACKS M	TRACKS D	OTHER-RR USE	# CB	# SS	# WW	# FL	# G	# LNS	INT	EST ADT
C100094072+0.110	092373	BN	060565F	REDWATER BR	0.89	1	0	0	2	0	0	0	0	5	0	3319
CM01033000+0.020	101674	UP	812437R	MAIN LINE	328.58	1	1	0	2	0	0	0	0	2	2	100
CM01033000+0.060	101674	UP	812435M	MAIN LINE	328.12	1	2	0	2	0	0	0	0	2	4	1310
CM01033000+0.080	101774	UP	812434F	MAIN LINE	327.94	1	1	0	0	0	0	2	0	2	4	1560
CM01033000+0.100	101674	UP	812433Y	MAIN LINE	327.82	1	1	0	2	0	0	0	0	2	4	1260
CM01033000+0.400	101674	UP	812436U	MAIN LINE	328.26	1	6	0	2	0	0	0	0	2	2	300
CM01073000+0.020	102474	UP	812515F	MAIN LINE	280.29	1	4	0	2	0	0	0	0	2	2	50
CM01073000+0.040	102474	UP	812514Y	MAIN LINE	279.84	1	2	0	2	0	0	0	0	2	2	140
CM01073000+0.060	102474	UP	812513S	MAIN LINE	279.69	1	1	0	2	0	0	0	0	2	2	160
CM02491000+0.120	011874	BN	090284C	FLATHEAD VALLEY	33.55	0	1	0	1	0	0	0	0	2	0	700
CM05013000+0.020	091274	BN	099278E	CLARKS FORK	19.15	1	1	0	2	0	0	0	0	2	0	990
CM05013000+0.040	091274	BN	099277X	CLARKS FORK	19.29	1	2	0	2	0	0	0	0	2	0	250
CM05047000+0.020	091074	BN	091027H	MAIN LINE	493.70	1	1	0	2	2	0	0	0	2	1	740
CM05064000+0.020	090574	BN	060335D	ROCKY FORK	18.02	1	0	0	2	0	0	0	0	2	0	300
CM05064000+0.040	090574	BN	060336K	ROCKY FORK	18.09	1	0	0	1	0	0	0	0	2	0	300
CM05064000+0.060	090574	BN	060337S	ROCKY FORK	18.15	1	0	0	1	0	0	0	0	2	0	50
CM05064000+0.080	090575	BN	060338Y	ROCKY FORK	18.29	1	0	0	0	0	0	0	0	2	0	80
CM05093000+0.010	090674	BN	099274C	ROCKY FORK	44.11	1	0	0	2	0	0	0	0	2	0	600
CM05093000+0.020	090674	BN	099271G	ROCKY FORK	43.76	1	1	0	1	0	0	0	0	2	0	330
CM05093000+0.040	090674	BN	099273V	ROCKY FORK	44.04	1	0	0	2	0	0	0	0	2	0	450
CM05093000+0.080	090674	BN	099272N	ROCKY FORK	43.98	1	0	0	0	0	0	0	0	2	0	510
CM09063000+0.020	092474	CMSP	394089U	MAIN LINE	1043.75	1	0	0	2	0	0	0	0	2	2	10
CM09080000+0.020	110973	BN	092658M	MAIN LINE	78.72	1	3	0	2	0	0	0	0	2	8	3830
CM09080000+0.040	060374	CMSP	399094H	MAIN LINE	1119.40	1	2	0	2	0	0	2	0	2	2	1420
CM09080000+0.060	060374	CMSP	399095P	MAIN LINE	1119.50	1	5	0	2	0	0	0	0	2	2	440
CM11050000+0.020	110273	BN	092879P	RIVER SPUR	0.47	0	1	0	0	0	0	0	0	2	0	1500
CM11050000+0.060	110273	BN	092870D	INDUSTRY SPUR	0.13	0	1	0	2	0	0	0	0	2	0	260
CM11050000+0.080	110273	BN	092871K	INDUSTRY SPUR	215.32	0	1	0	0	0	0	0	0	2	0	2780
CM11050000+0.100	110273	BN	092874F	INDUSTRY SPUR	0.26	0	1	0	0	0	0	0	0	2	0	2400
CM11050000+0.120	110273	BN	092869J	MAIN LINE	214.90	1	1	0	2	2	0	0	0	2	5	1410
CM11050000+0.250	110273	BN	092872S	MAIN LINE	215.32	1	5	0	2	2	0	0	0	2	10	2780
CM11095000+0.100	101173	BN	063496Y	TAIL WYE	0.02	0	1	0	2	0	0	0	0	2	0	180
CM12002000+0.020	052174	BA&P	842390P	MAIN LINE	25.81	1	0	0	2	0	0	0	0	2	6	220
CM12002000+0.040	052474	BA&P	842420E	ARBITER SPUR	0.10	1	0	0	2	0	0	0	0	2	0	125
CM12002000+0.060	052474	BA&P	842423A	ARBITER SPUR	0.21	1	0	0	0	0	0	0	0	2	0	60
CM12002000+0.080	041074	BA&P	842381R	MAIN LINE	25.10	1	1	0	0	2	0	2	0	2	16	1540
CM14032000+0.020	072474	MILW	398681F	NORTHERN MONT.	95.21	1	0	0	2	0	0	0	0	2	1	120
CM14071000+0.020	072374	MILW	398603Y	NORTHERN MONT.	59.93	1	0	0	2	0	0	0	0	2	1	30
CM14071000+0.040	072374	MILW	398605M	NORTHERN MONT.	60.08	1	0	0	2	0	0	0	0	2	1	175
CM14071000+0.060	072374	MILW	398606U	NORTHERN MONT.	60.13	1	0	0	2	0	0	0	0	2	1	220
CM14071000+0.080	072374	MILW	398607R	NORTHERN MONT.	60.19	1	0	0	2	0	0	0	0	2	1	1260
CM14071000+0.100	072374	MILW	398608H	NORTHERN MONT.	60.24	1	0	0	2	0	0	0	0	2	1	300
CM14071000+0.120	072374	MILW	398609P	NORTHERN MONT.	60.29	1	0	0	2	0	0	0	0	2	1	1400
CM14071000+0.140	072374	MILW	398612X	NORTHERN MONT.	60.40	1	0	0	2	0	0	0	0	2	1	1035
CM14071000+0.160	072374	MILW	398614L	NORTHERN MONT.	60.45	1	0	0	2	0	0	0	0	2	1	230
CM14071000+0.180	072374	MILW	398616A	NORTHERN MONT.	60.50	1	0	0	2	0	0	0	0	2	1	160
CM14071000+0.200	072374	MILW	398618N	NORTHERN MONT.	60.55	1	0	0	2	0	0	0	0	2	1	940
CM14071000+0.220	072474	BN	088598T	LEWISTOWN LINE	17.14	1	0	0	2	0	0	0	0	2	0	1320
CM14071000+0.240	072474	MILW	398630V	NORTHERN MONT.	62.22	1	0	0	0	0	0	2	0	2	1	870
CM14071000+0.280	072374	MILW	398619V	NORTHERN MONT.	60.32	1	0	0	0	0	0	1	0	2	1	1230
CM14082000+0.020	072374	MILW	398582H	NORTHERN MONT.	43.47	1	2	0	2	0	0	0	0	2	1	210
CM14124000+0.020	073074	MILW	398945Y	WINIFRED BR	22.47	1	1	0	2	0	0	0	0	2	0	40

Figure 31. R.R. CROSSING LIST C Output

REQUEST FOR ROADWAY ENVIRONMENT SUBSYSTEM INFORMATION

TO: Montana Highway Traffic Safety Division
Capitol Station,
Helena, MT 59601

FROM: Traffic Department
City of Missoula
Missoula, Montana

PROGRAM: RAILROAD LIST

REQUIRED PARAMETERS:

DATA: U.S. 10

LIST: Data elements from list A

OPTIONAL PARAMETERS:

START-MILEPOINT: 103+0.791

END-MILEPOINT: 106+0.578

SELECT: Please provide a list of all railroad crossings with a least ten trains per day.

SAMPLE 8

PARTIAL LIST OF
RAILROAD SELECT DATA ELEMENTS

KEY	ROUTE SYSTEM
ROUTE NUMBER	REFERENCE POST
DISTANCE	MILEPOINT
SURVEY DATE	ROAD WIDTH
DIRECTION 1	ANGLE OR 1
CURVE 1	GRADE 1
# DAILY PASSENGER TRAINS	# DAILY FREIGHT TRAINS
DAILY PASSENGER TRAIN SPEED	DAILY FREIGHT TRAIN SPEED
URBAN - RURAL	LOCATION
# MAIN TRACKS	# STOP SIGNS
# WIGWAGS	# FLASHING LIGHTS
# GATES	# LANES
# NIGHTLY TRAINS	ESTIMATED AVERAGE DAILY TRAFFIC
OPERATING RAILROAD	CROSSING IDENTIFICATION

LIST 5

SKID FILE

1) LIST - this program provides a listing of selected records in the Skid file. Each record in the file contains the test results from one skid test. Milepoint records describe tests performed on rural locations, while coordinate records describe tests performed in urban locations. Each record printed requires one line of output and records all data elements for a given skid test. An example of the output for this program is shown in Figure 33 on page 66.

a) Required parameters - none.

b) Optional parameters - we will list only 9 of those available.

CODE-LIST - the user may request or refuse a list of code abbreviation explanations. If this option is not specified, the list will be provided. (See Figure 32, page 65.)

DATA - the user may specify the roadway system or system and route number (see page 5).

START-MILEPOINT, END-MILEPOINT - (see page 5). If this option is not specified, the total system or route is used.

CITY - the user may select the city to be processed.

START-DATE, END-DATE - the user may select the period of time covered by the records to be processed.

MAINT-DIV - the Montana Dept of Highways Maint Division may be designated.

SELECT - (see pages 6, 7). Stipulate special restrictions you would like to impose on the records to be processed. A partial list of the Skid data elements for which Select relationships can be established is shown in List 6 on page 68. Data elements from the Roadlog file, List 1 on page 11, and the Traffic file, List on page 32, are also available.

c) In Sample 9 on page 67, we see an example of a typical request that a user might send to Montana Highway Traffic Safety. This request would provide a list of all skid data for Federal Aid Interstate 94, in Custer County, obtained during the summer of 1974.

FIELDS AND ABBREVIATIONS ARE:

ROUTE-NUMBER -- INCLUDES ROUTE SYSTEM AND NUMBER
MILEPOINT -- REFERENCE POST AND DISTANCE FROM REFERENCE POST
D-R -- DIRECTION
L-N -- LANE
W-L -- WHEEL
DATE -- DATE OF TEST
SEQ -- SEQUENCE NUMBER OF TEST
SP -- SPEED
SK-NO -- SKID NUMBER
S-T -- SURFACE TYPE
S-X -- SURFACE TEXTURE
H-C -- HORIZONTAL CURVE
G-D -- GRADE
PAV-TEM -- PAVEMENT TEMPERATURE
F-M -- FOREIGN MATTER ON SURFACE
L-C -- LOCATION
S-R -- SURFACE REPAIR
DATE-OF-UPDATE -- MOST RECENT DATE RECORD WAS UPDATED

CODES USED IN SKID RECORDS ARE:

ROUTE SYSTEM:
I = FEDERAL AID INTERSTATE
P = FEDERAL AID PRIMARY
S = FEDERAL AND SECONDARY
U = FEDERAL AID URBAN
L = LOCAL
DIRECTION:
I = INCREASING MILEPOSTS
D = DECREASING MILEPOSTS
R = RAMP
LANE:
L = EXCLUSIVE LEFT TURN LANE
I = INSIDE LANE
M = MIDDLE LANE
O = OUTSIDE LANE
R = EXCLUSIVE RIGHT TURN LANE
A = ACCELERATION LANE LEAVING INTERSECTION
WHEEL:
L = LEFT WHEEL
R = RIGHT WHEEL
SURFACE TYPE:
A = ASPHALT SURFACE
C = CONCRETE SURFACE
O = OTHER
SURFACE TEXTURE CODES FOR ASPHALT SURFACES ARE:
1 = COARSE TEXTURED KNOBBY OR ANGULAR
2 = NORMAL FINE TEXTURED
3 = POLISHED AGGREGATE
4 = FLUSHED, BLEEDING, OR OVERLY RICH BITUMINOUS
5 = OTHER
SURFACE TEXTURE CODES FOR CONCRETE SURFACES ARE:
1 = BROOMED OR ROUGH
2 = ORDINARY CONCRETE (NORMAL)

3 = POLISHED
4 = STUD-WORN
5 = OTHER
HORIZONTAL CURVATURE:
T = TANGENT
C = CURVE
GRADE:
N = NONE OR NEGLIGIBLE
U = UPGRADE (IN DIRECTION OF TRAVEL)
D = DOWNGRADE (IN DIRECTION OF TRAVEL)
FOREIGN MATTER ON SURFACE:
1 = NONE
2 = LOOSE AGGREGATE OR SAND
3 = DIRT OR MUD
4 = LEAVES
5 = GARBAGE OR LITTER
6 = MANURE
7 = FARM PRODUCTS
8 = OTHER
LOCATION:
N = NORMAL (NEITHER INTERSECTION NOR BRIDGE)
B = BRIDGE
I = INTERSECTION
C = COMBINED -- INTERSECTION AND BRIDGE
SURFACE REPAIR:
N = NORMAL
O = SHORT OVERLAY SECTION
P = SPOT PATCHES

Figure 32. SKID LIST Abbreviations

SKID LISTING -- MAINTENANCE DIVISION 51 JUL 11,1975

ROUTE NUMBER	MILEPOINT	D P	L N	W L	--DATE--	SEQ.	SP	SK NO	S T	S X	H C	G D	PAV TEM	F M	L C	S P	----------COMMENTS----------	DATE OF UPDATE
100090	389+0.000	D	D	L	6/00/73	0001	40	48									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	389+0.000	I	D	L	6/00/73	0001	40	52									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=E	
100090	390+0.000	D	D	L	6/00/73	0001	40	41									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	390+0.000	I	D	L	6/00/73	0001	40	52									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=E	
100090	391+0.000	D	D	L	6/00/73	0001	40	56									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	391+0.000	I	D	L	6/00/73	0001	40	47									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=E	
100090	392+0.000	D	D	L	6/00/73	0001	40	46									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	392+0.000	I	D	L	6/00/73	0001	40	44									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=E	
100090	393+0.000	D	D	L	6/00/73	0001	40	46									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	393+0.000	I	D	L	6/00/73	0001	40	47									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=E	
100090	394+0.000	D	D	L	6/00/73	0001	40	53									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	394+0.000	I	D	L	6/00/73	0001	40	45									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=E	
100090	395+0.000	D	D	L	6/00/73	0001	40	45									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	395+0.000	I	D	L	6/00/73	0001	40	49									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=E	
100090	396+0.000	D	D	L	6/00/73	0001	40	40									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	396+0.000	I	D	L	6/00/73	0001	40	39									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=E	
100090	397+0.000	D	D	L	6/00/73	0001	40	40									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	397+0.000	I	D	L	6/00/73	0001	40	45									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=E	
100090	398+0.000	D	D	L	6/00/73	0001	40	42									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	398+0.000	D	D	L	6/00/73	0001	40	39									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	399+0.000	I	D	L	6/00/73	0001	40	42									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=E	
100090	400+0.000	D	D	L	6/00/73	0001	40	37									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=W	
100090	400+0.000	D	D	L	9/00/74	0001	40	28									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.000	D	D	L	9/00/74	0002	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.000	D	D	L	9/00/74	0003	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.000	D	D	L	9/00/74	0004	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.000	D	D	L	9/00/74	0005	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.000	D	D	L	9/00/74	0006	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.000	D	D	L	9/00/74	0007	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.000	D	D	L	9/00/74	0008	40	28									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.000	D	D	L	9/00/74	0009	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.000	D	D	L	9/00/74	0010	40	28									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.000	D	D	L	9/00/74	0011	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.000	I	D	L	6/00/73	0001	40	53									OLD-TEST-1= ,OLD-TEST-2= ,OLD-DIREC=E	
100090	400+0.000	I	D	L	9/00/74	0001	40	50									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=E	
100090	400+0.000	I	D	L	9/00/74	0002	40	47									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=E	
100090	400+0.000	I	D	L	9/00/74	0003	40	48									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=E	
100090	400+0.000	I	D	L	9/00/74	0004	40	50									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=E	
100090	400+0.000	I	D	L	9/00/74	0005	40	48									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=E	
100090	400+0.000	I	D	L	9/00/74	0006	40	44									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=E	
100090	400+0.000	I	D	L	9/00/74	0007	40	48									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=E	
100090	400+0.000	I	D	L	9/00/74	0008	40	48									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=E	
100090	400+0.000	I	D	L	9/00/74	0009	40	44									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=E	
100090	400+0.000	I	D	L	9/00/74	0010	40	47									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=E	
100090	400+0.500	D	D	L	9/00/74	0001	40	24									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.500	D	D	L	9/00/74	0002	40	24									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.500	D	D	L	9/00/74	0003	40	28									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.500	D	D	L	9/00/74	0004	40	24									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.500	D	D	L	9/00/74	0005	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.500	D	D	L	9/00/74	0006	40	24									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.500	D	D	L	9/00/74	0007	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.500	D	D	L	9/00/74	0008	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.500	D	D	L	9/00/74	0009	40	28									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.500	D	D	L	9/00/74	0010	40	26									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=W	
100090	400+0.500	I	D	L	9/00/74	0001	40	15									OLD-TEST-1=A,OLD-TEST-2=R,OLD-DIREC=E	

Figure 33 SKID LIST Output

REQUEST FOR ROADWAY ENVIRONMENT SUBSYSTEM INFORMATION

TO: Montana Highway Traffic Safety Division
Capitol Station,
Helena, MT 59601

FROM: Sheriff's Office
Custer County
Miles City, Montana

PROGRAM: SKID LIST

REQUIRED PARAMETERS:

None

OPTIONAL PARAMETERS:

DATA: Interstate 94
START-MILEPOINT: 120 + 0.134
END-MILEPOINT: 163 + 0.404
START-DATE: June 1, 1974
END-DATE: October 1, 1974

SAMPLE 9

PARTIAL LIST OF
SKID SELECT DATA ELEMENTS

KEY	ROUTE NUMBER
ROUTE SYSTEM	ROUTE SYSTEM AND NUMBER
REFERENCE POST	DISTANCE
MILEPOINT	RURAL DIRECTION
CITY	X COORDINATE
Y COORDINATE	MUNICIPAL DIRECTION
DISTANCE FROM INTERSECTION	LANE
WHEEL	MONTH OF TEST
DAY OF TEST	YEAR OF TEST
SURFACE TYPE	HORIZONTAL CURVE
GRADE	LOCATION
SURFACE REPAIR	SURFACE TEXTURE
FOREIGN MATTER	PAVEMENT TEMPERATURE
SPEED	SKID NUMBER

LIST 6

SKID FILE (cont'd)

2) LOW-SKID-NUMBERS - this program provides a listing of locations having a Skid number of 40 or less. The listing is divided into three output columns. Locations with skid numbers less than 20 are printed in the leftmost column, between 20 and 30 in the center column, and between 30 and 40 in the right column. An example of the output is shown in Figure 34 on page 70.

a) Required parameters - none.

b) Optional parameters - we will list only 8 of those available.

DATA - the user may specify the roadway system or system and route number to be processed (see page 5).

START-MILEPOINT, END-MILEPOINT - (see page 5). If this option is not specified, the total system or route will be processed.

CITY - the user may select the city records to be processed.

START-DATE, END-DATE - the user may select the period of time covered by the records to be processed.

MAINT-DIV - the user may specify the Division responsible for Maintenance to be processed.

SELECT - (see pages 6, 7). Stipulate special restrictions you would like to impose on the records to be processed. A partial list of the Skid data elements for which Select relationships can be established is shown in List 6 on page 68. Data elements from the Roadlog file, List 1 on page 11, and the Traffic file, List 2 on page 32, are also available.

c) In Sample 10 on page 71, we see an example of a typical request which a user might send to Montana Highway Traffic Safety to be processed.

This request would provide a list of low skid numbers for that portion of Federal Aid primary 50 (US 191) from West Yellowstone to Four Corners in Gallatin County.

LOW-SKID-NUMBERS MAINTENANCE051VISION

--------- SKID NUMBERS BELOW 20 ---------

ROUTE NUMBER	MILEPOINT	DIR	LAN	WHL	SPEED	SKID NUMBER
I00090	459+0.791	D	0	L	40	16/16
I00090	459+0.791	D	0	L	40	18/18
I00090	459+0.791	D	0	L	40	18/18
I00090	459+0.791	D	0	L	40	18/18
I00090	460+0.300	I	0	L	40	17/17
I00090	460+0.300	I	0	L	40	16/16
I00090	460+0.300	I	0	L	40	17/17
I00090	460+0.300	I	0	L	40	19/19
I00090	460+0.900	I	0	L	40	15/15
I00090	460+0.900	I	0	L	40	14/14
I00090	460+0.900	I	0	L	40	16/16
I00090	460+0.900	I	0	L	40	14/14
I00090	460+0.900	I	0	L	40	15/15
I00090	461+0.800	I	0	L	40	16/16
I00090	461+0.800	I	0	L	40	16/16
I00090	461+0.800	I	0	L	40	16/16
I00090	461+0.800	I	0	L	40	16/16

----- SKID NUMBERS BETWEEN 20 AND 30 ----

ROUTE NUMBER	MILEPOINT	DIR	LAN	WHL	SPEED	SKID NUMBER
I00090	458+0.000	I	0	L	40	27/27
I00090	458+0.000	I	0	L	40	24/24
I00090	458+0.000	I	0	L	40	26/26
I00090	458+0.000	I	0	L	40	24/24
I00090	458+0.000	I	0	L	40	24/24
I00090	459+0.791	D	0	L	40	20/20
I00090	460+0.000	I	0	L	40	27/27
I00090	460+0.000	I	0	L	40	24/24
I00090	460+0.000	I	0	L	40	26/26
I00090	460+0.000	I	0	L	40	24/24
I00090	460+0.000	I	0	L	40	28/28
I00090	460+0.300	D	0	L	40	26/26
I00090	460+0.300	D	0	L	40	29/29
I00090	460+0.300	D	0	L	40	28/28
I00090	460+0.300	D	0	L	40	28/28
I00090	460+0.300	I	0	L	40	21/21
I00090	461+0.000	D	0	L	40	20/20
I00090	461+0.000	D	0	L	40	20/20
I00090	461+0.000	D	0	L	40	20/20
I00090	461+0.000	D	0	L	40	20/20
I00090	461+0.000	D	0	L	40	21/21

----- SKID NUMBERS BETWEEN 30 AND 40 ----

ROUTE NUMBER	MILEPOINT	DIR	LAN	WHL	SPEED	SKID NUMBER
I00090	459+0.000	I	0	L	40	40/40
I00090	459+0.000	I	0	L	40	38/38
I00090	459+0.000	I	0	L	40	36/36
I00090	459+0.000	I	0	L	40	38/38
I00090	459+0.000	I	0	L	40	40/40
I00090	459+0.500	I	0	L	40	40/40
I00090	459+0.500	I	0	L	40	39/39
I00090	459+0.500	I	0	L	40	38/38
I00090	459+0.500	I	0	L	40	40/40
I00090	460+0.000	D	0	L	40	37/37
I00090	460+0.300	D	0	L	40	30/30

Figure 34 LOW-SKID-NUMBERS Output

REQUEST FOR ROADWAY ENVIRONMENT SUBSYSTEM INFORMATION

TO: Montana Highway Traffic Safety Division
Capital Station
Helena, MT 59601

FROM: County Commissioner
Gallatin County
Bozeman, MT 59175

PROGRAM: LOW-SKID-NUMBERS

REQUIRED PARAMETERS:

None

OPTIONAL PARAMETERS:

DATA: Federal Aid Primary 50
START-MILEPOINT: 0+0.000
END-MILEPOINT: 81+0.910

SAMPLE 10